THE

Journal

OF THE

AMERICAN OSTEOPATHIC ASSOCIATION

Volume Fifty-Four

NEUROPSYCHIATRY NUMBER

Number 3 | 212 East Ohio St., Chicago 11, Ill. | November, 1954

Noyes—MODERN PSYCHIATRY

Fourth Edition

Here is today's standard reference work on clinical management of mental disorders.

Principles of psychiatry are fully presented, with emphasis on application in your daily practice. Dr. Noyes gives you a clear insight into the psychological mechanisms that operate automatically in all human beings, both the well-adjusted and the mentally ill. He shows you how to *recognize, treat* and *manage* both major and minor psychiatric disorders. You are guided through each step in examining the patient from taking the history and testing, to interpreting the diagnostic data. Detailed case histories help you to understand these methods.

By ARTHUR P. NOYES, M.D., Superintendent, Norristown State Hospital, Norristown, Pennsylvania; Associate Professor of Psychiatry, Graduate School of Medicine, University of Pennsylvania. 609 pages, 6" x 9". $7.00 Fourth Edition!

W. B. SAUNDERS COMPANY **West Washington Square, Philadelphia, 5**

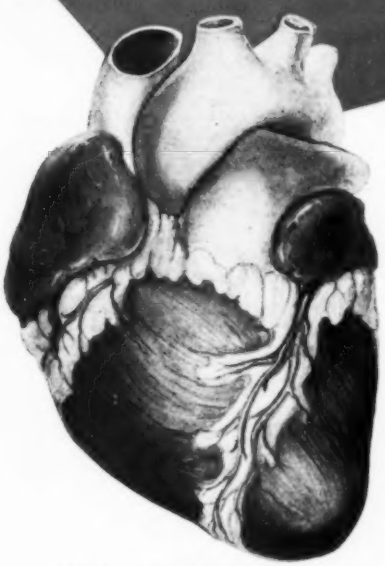
CHECKMATE FOR PAIN

Yes, whenever muscles ache use **MINIT-RUB,**® the modern counterirritant. It starts to relieve pain in a matter of minutes. Just a dab in the palm of the hand, a minute or two of brisk rubbing. A soothing warmth promotes prompt relaxation.

BRISTOL-MYERS COMPANY, 19 WEST 50 STREET, NEW YORK 20, N. Y.

NOW...

THERAPY IN DEPTH



in angina pectoris... status anginosus

PENTOXYLON—combining the tranquilizing, stress-relieving, bradycrotic effects of Rauwiloid® and the prolonged coronary vasodilating effect of pentaerythritol tetranitrate (usually abbreviated PETN)—provides a completeness of treatment heretofore unavailable to angina patients.

Therapy in depth—a wholly new principle in angina therapy—for the first time encompasses effective treatment for cause-and-effect mechanisms, which goes deeper than the superficial plane of relief afforded by simple coronary vasodilatation.

Pentoxylon is not a substitute for nitroglycerin. Continued therapy with Pentoxylon can be expected to reduce markedly or abolish nitroglycerin requirements, and greatly relieve the apprehension of the patient who lives in continuous dread of the next attack.

Each long-acting tablet of Pentoxylon contains pentaerythritol tetranitrate (PETN) 10 mg. and Rauwiloid 1 mg.

Dosage: one to two tablets q.i.d., usually at mealtime and before retiring.

Available in bottles of 100 tablets.

- Reduces nitroglycerin needs
- Reduces severity of attacks
- Reduces incidence of attacks
- Increases exercise tolerance
- Reduces tachycardia
- Reduces anxiety, allays apprehension
- Lowers blood pressure in hypertensives
- Does not lower blood pressure in normotensives
- Produces objective improvement demonstrable by EKG.

Descriptive brochure on request.

PENTOXYLON™

Another Riker *Original*

RIKER LABORATORIES, INC., LOS ANGELES 48, CALIFORNIA

CONTENTS, NOVEMBER, 1954

ORIGINAL ARTICLES—

Kyphosis. David Heilig, B.A., D.O., Drexel Hill, Pa. 155
Lordosis. George J. Luibel, D.O., Fort Worth, Tex. 159
Fetal Cranial Stresses During Pregnancy and Parturition. Forceps Application and Cranial Distortion. Donald E. Pinder, D.O., Med.Sc.M., and Julian Lansing Mines, D.O., F.A.C.O.O.G., Los Angeles 164
Fundamentals of Simple Office Surgical Procedures. E. Ivan Cherashore, D.O., Clifton, N. J. 168
Arrhythmias as Medical Emergencies. John J. Lalli, D.O., Jackson Heights, N. Y. 171

EDITORIALS—

II—Research and Education in Osteopathy 175
Atomic Medicine—1954. L. Raymond Hall, D.O. 177
"Fifty Thousand or More for Fifty-Four" 178
George Washington Riley—1866-1954. R. C. McCaughan, D.O. 178

NOTES AND COMMENTS 179

DEPARTMENT OF PUBLIC AFFAIRS—

Bureau of Public Education on Health: The American Legion Adopts Resolutions on Public Hospitals 181

DEPARTMENT OF PUBLIC RELATIONS—

Independent Health Plans 182

CURRENT LITERATURE 182

BOOK NOTICES 184

NEUROPSYCHIATRIC SUPPLEMENT—

Communication Ability and Marital Discord. Edythe Gates Varner, D.O., Los Angeles 189
One Hundred Males Arrested for Homosexuality. H. E. Higley, D.O., Macon, Mo. 194
"Tractable Pain" During Psychoanalysis. Paul B. Harbour, D.O., Milton, Mass. 197
Psychotherapy of Speech Defectives. Fleda M. Brigham, M.A., D.O., Kirksville, Mo. 200
Reality Contact in Schizophrenia. Thomas J. Meyers, Ph.D., D.O., F.A.C.N., Pasadena, Calif. 205
Head Trauma in Children and Its Effect on the Pituitary Gland. K. Grosvenor Bailey, D.O., F.A.C.N., F.A.C.O.S., Los Angeles 208

CONVENTIONS AND MEETINGS....ad p. 47

STATE AND NATIONAL BOARDS..ad p. 47

BOOKS RECEIVED ....ad. p. 62

AUTHOR AND SUBJECT INDEX

Abdomen, wound disruption, [Tweedie and Long] 184
Accidents:
epidemiological approach to traffic safety, [Chapman] ....ad p. 55
falls as major cause of death ....ad p. 57
fatal, decrease in 1953 ....ad p. 59
neglected element in highway safety, [Blaisdell] ....ad p. 51
American College of Neuropsychiatrists, supplement contributed by 187
American Legion adopts resolutions on public hospitals 181
Arrhythmias as medical emergencies, [Lalli] 171
Asthma, treatment of status asthmaticus, [Carryer, *et al.*] 182
Atomic medicine—1954, [Hall] 177
Automobiles:
epidemiological approach to traffic safety, [Chapman] ....ad p. 55
neglected element in highway safety, [Blaisdell] ....ad p. 51
Bailey, K. Grosvenor:
Head trauma in children and its effect on the pituitary gland 208
Ballistocardiogram: See Heart
Book Notices:
Fundamentals of Internal Medicine. Wallace Mason Yater 184
Problems in the Anatomy of the Pelvis. Eduard Uhlenhuth 184
A Textbook of Clinical Neurology. Israel S. Wechsler 184
Surgical Forum. American College of Surgeons 185
The Catholic Doctor. Fr. A. Bonnar....185
Geriatric Medicine. Edward J. Stieglitz....185
Communicable Disease Control. Gaylord W. Anderson and Margaret G. Arnstein 185
Fluid and Electrolyte Therapy. Franklin L. Ashley and Horace G. Love 186
Pathology. W. A. D. Anderson, Ed. 186
A Handbook for Dissectors. J. C. Boileau Grant and H. A. Cates 186
French's Index of Differential Diagnosis. Arthur H. Douthwaite, Ed. 186
Bailey's Text-Book of Histology. Philip E. Smith and Wilfred M. Copenhaver, Revisers 186
Psychosomatic Case Book. Roy R. Grinker and Fred P. Robbins 212
Modern Clinical Psychiatry. Arthur P. Noyes 212
The Psychiatric Aide. Alice M. Robinson 212
Books received ....ad p. 62
Breast, radical operation, [Chase] 183
Brigham, Fleda M.:
Psychotherapy of speech defectives 200
Cherashore, E. Ivan:
Fundamentals of simple office surgical procedures 168
Children:
head trauma and its effect on pituitary gland, [Bailey] 208
school-age, health ....ad p. 60
Christmas Seal campaign, "Fifty thousand or more for fifty-four" 178
Communication ability and marital discord, [Varner] 189
Conventions and meetings, announcements ....ad p. 47
Correction 186
Cranial stresses during pregnancy and parturition; forceps application and cranial distortion, [Pinder and Mines] 164
Education and research in osteopathy 175
Emergencies, medical, arrhythmias as, [Lalli] 171
Examinations: See State and National Boards
Extremities, lower, developmental deformities, [Knight] 183
Forceps: See Labor
Hall, L. Raymond:
Atomic medicine—1954 177
Harbour, Paul B.:
"Tractable pain" during psychoanalysis....197
Head: See also Cranium; Headache
trauma in children and its effect on pituitary gland, [Bailey] 208
Headache, oto-neuro-ophthalmologic manifestations of cervical origin (posterior cervical sympathetic syndrome of Barre-Lieou), [Gayral and Neuwirth] 183
Health: See also Health; Insurance, health
of school-age children ....ad p. 60
Heart: See also Arrhythmias
essay on the Ballistocardiogram, [Starr]..183
Heilig, David:
Kyphosis 155
Higley, H. E.:
One hundred males arrested for homosexuality 194
Homosexuality, one hundred males arrested for, [Higley] 194
Hospitals:
The American Legion adopts resolutions on public hospitals 181
Insurance, health, independent plans 182
Kyphosis: See Spine
Labor, fetal cranial stresses during parturition; forceps application and cranial distortion, [Pinder and Mines] 164
Lalli, John J.:
Arrhythmias as medical emergencies 171
Licensure: See State and National Boards
Lordosis: See Spine
Luibel, George J.:
Lordosis 159
Marital discord and communication ability, [Varner] 189
McCaughan, R. C.:
George Washington Riley—1866-1954....178
Medicine, atomic—1954, [Hall] 177
Membership, A.O.A.:
applications ....ad p. 65
changes of address and new locations..ad p.62
Meyers, Thomas J.:
Reality contact in schizophrenia 205
Mines, Julian Lansing: See Pinder, Donald E., jt. author
National Board of Examiners for Osteopathic Physicians and Surgeons: See State and National Boards
Notes and Comments 179
Obesity 174
Osteopathy: See also Technic, Osteopathic
research and education 175
Pain, tractable, during psychoanalysis, [Harbour] 197
Paresis, long-term trend and economic factors in the United States 167
Parturition: See Labor
Pinder, Donald E., and Mines, Julian Lansing:
Fetal cranial stresses during pregnancy and parturition. Forceps application and cranial distortion 164
Pituitary gland, effects of head trauma in children, [Bailey] 208
Pregnancy, fetal cranial stresses during, [Pinder and Mines] 164
Psychoanalysis, tractable pain during, [Harbour] 197
Psychotherapy: See also Psychoanalysis
of speech defectives, [Brigham] 200
Public Health, long-term trend and economic factors of paresis in the United States 167
Radiation exposure in the United States....170
Reality contact in schizophrenia, [Meyers]....205
Reregistration of Osteopathic Physicians: See State and National Boards
Research and education in osteopathy 175
Riley, George Washington, 1866-1954, [McCaughan] 178
Schizophrenia, reality contact in, [Meyers]..205
Speech defectives, psychotherapy, [Brigham] 200
Spine:
kyphosis, [Heilig] 155
lordosis, [Luibel] 159
State and National Boards:
announcements ....ad p. 47
examinations by National Board....ad p. 50
reregistration of osteopathic licenses....ad p. 49
Surgery, fundamentals of simple office procedures. [Cherashore] 168
Swope, Chester D.:
Department of Public Relations 182
Technic, Osteopathic:
kyphosis, [Heilig] 155
lordosis, [Luibel] 159
Varner, Edythe Gates:
Communication ability and marital discord 189

Published monthly by the American Osteopathic Association. Printed by Pioneer Publishing Company, Publication Office, 100 S. Kenilworth Ave., Oak Park, Ill. **EDITORIAL AND EXECUTIVE OFFICES,** 212 E. Ohio St., Chicago 11, Ill. Subscription $10 a year- single copies, $1.00. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 31, 1922. Entered at Oak Park, Ill., Post Office as second class matter, April 1, 1926, under Act of March 3, 1879.

ALL CORRESPONDENCE should be addressed to 212 E. Ohio St., Chicago, Ill. **CHANGE OF ADDRESS:** If possible, clip address from mailing envelope of your copy of this magazine and send along with new address (with zone number if any). Allow 5 weeks for change-over.

FIRST COMPLETE FORMULA

EXPRESSLY

FOR THE COUGHING PATIENT

relieves cough "tickle," quiets "hack"

curbs congestive symptoms

patients feel better, sleep better

relieves aches and pains

valuable in allergic or bronchial coughs

new CORICIDIN syrup

tastes good—an ideal vehicle

Each teaspoonful (5 cc.) of CORICIDIN Syrup* contains:

Dihydrocodeinone bitartrate	1.67 mg.
CHLOR-TRIMETON Maleate	2.0 mg.
Sodium salicylate	225.0 mg.
Sodium citrate	120.0 mg.
Caffeine	30.0 mg.
Glyceryl guaiacolate	30.0 mg.

combined in a delicious, compatible syrup acceptable to all ages.

Dosage: Adults: One teaspoonful initially followed by another teaspoonful in one hour. Thereafter one teaspoonful three to four times daily.

Children: One-half adult dosage for those 6-12 years old. Children under 6 years according to age or body weight.

*Exempt narcotic.

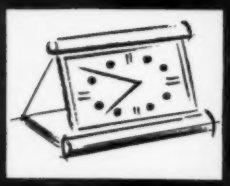
CORICIDIN,® brand of analgesic-antipyretic compound.
CHLOR-TRIMETON® Maleate, brand of chlorprophenpyridamine maleate.

Schering

CORICIDIN Syrup

GENTLE · GENTLE · GENTLE · GENTLE · GENTLE · GENTLE · GENTLE · GENTLE · GENTLE

PROMPT · PROMPT · PROMPT · PROMPT · PROMPT · PROMPT · PROMPT · PROMPT · PROMPT



THOROUGH · THOROUGH · THOROUGH · THOROUGH · THOROUGH · THOROUGH · THOROUGH · THOROUGH · THOROUGH

and so a laxative of choice . . .

PHOSPHO-SODA (fleet)®

Purgative: — 4 teaspoonfuls or more before breakfast.

Aperient or mild laxative: — 2 teaspoonfuls before breakfast or before other meals, if indicated.

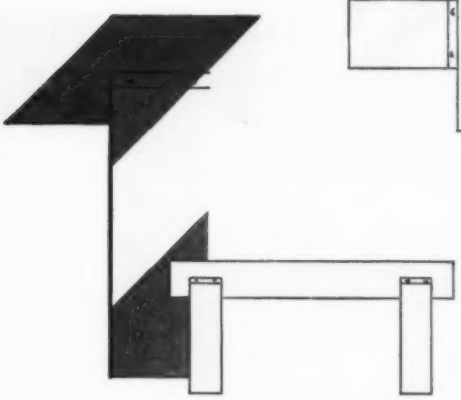
Administer in one half glass of water, followed by a second glass.

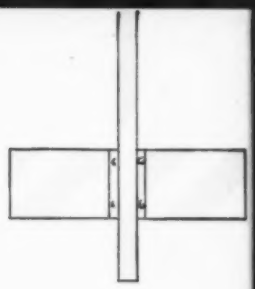
Phospho-Soda (Fleet) is a solution containing in each 100 cc. sodium biphosphate 48 Gm. and sodium phosphate 18 Gm.

C. B. FLEET COMPANY, INC. · Lynchburg, Virginia

'Phospho-Soda' and 'Fleet' are registered trademarks of C. B. Fleet Co., Inc.

Also Gentle . . . Prompt . . . Thorough
the FLEET ENEMA
in the "squeeze bottle" disposable unit





overcoming weight control obstacles

Obedrin®

and the 60-10-70 basic diet

Patients can lose weight and maintain a restricted diet, in comfort, without undesirable side effects . . .

EXCESSIVE DESIRE FOR FOOD

Obedrin offers the full anorexigenic value of Methamphetamine to curb the desire for food, while counteracting mood depression. Patient co-operation is made easier.

NERVOUS TENSION

To avoid excitation and insomnia, Pentobarbital is the ideal daytime sedative. It counteracts over-stimulation by Methamphetamine, but does not diminish the anorexigenic action.

VITAMIN DEFICIENCIES

Obedrin tablets contain adequate amounts of vitamins B_1 and B_2 to supplement the 60-10-70 Basic Diet, but not enough to stimulate the appetite.

EXCESSIVE TISSUE FLUIDS

Large doses of Ascorbic Acid aid in the mobilization of fluids, so often an obstacle in obesity.

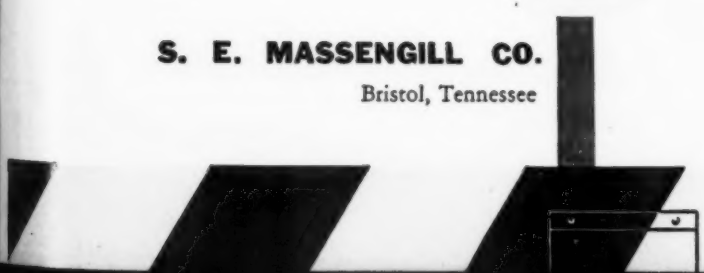
BULK NOT NECESSARY

The 60-10-70 Basic Diet provides enough roughage, so artificial bulk is unnecessary. The hazards of impaction caused by "bulk" producers is obviated.

Write For 60-10-70 Diet Pads, Weight Charts And Professional Sample Of Obedrin

S. E. MASSENGILL CO.
Bristol, Tennessee

Each tablet contains:	
Semoxydrine HCl (Methamphetamine HCl)	5 mg.
Pentobarbital	20 mg.
Ascorbic Acid	100 mg.
Thiamine HCl	0.5 mg.
Riboflavin	1 mg.
Niacin	5 mg.



simple,
effective
conception control

Ortho

NEW Sodium-free,
potassium-free analgesic
for rheumatic diseases

ARTAMIDE

WAMPOLE ®

combines
SALICYLAMIDE
(*non-irritating to gastric mucosa*)

with
ORGANIC IODINE
(*stimulates resorptive processes*)

plus PABA *and* ASCORBIC ACID

Maintenance of high salicylate blood levels **without undesirable side effects** has long been a goal in the management of pain in rheumatoid arthritis, rheumatic fever, osteoarthritis, fibrositis and gout.

This goal has been achieved in *Artamide*. Through the use of salicylamide instead of one of the common salts or esters of salicylic acid, *Artamide* avoids gastric irritation. Coadministration of alkalizing agents is therefore unnecessary. In addition, *Artamide* is completely free of sodium and potassium—an important consideration for patients requiring restricted intake of these elements.

Artamide, too, is the first anti-rheumatic analgesic to employ the fibrolytic action of iodine to stimulate resorptive processes. Organic bonding of iodine in *Organidin* (Wampole) sheathes the destructive power of elemental iodine while preserving its therapeutic utility. The efficacy of *Artamide* is further enhanced by the potentiating effect of PABA and the compensating action of ascorbic acid.

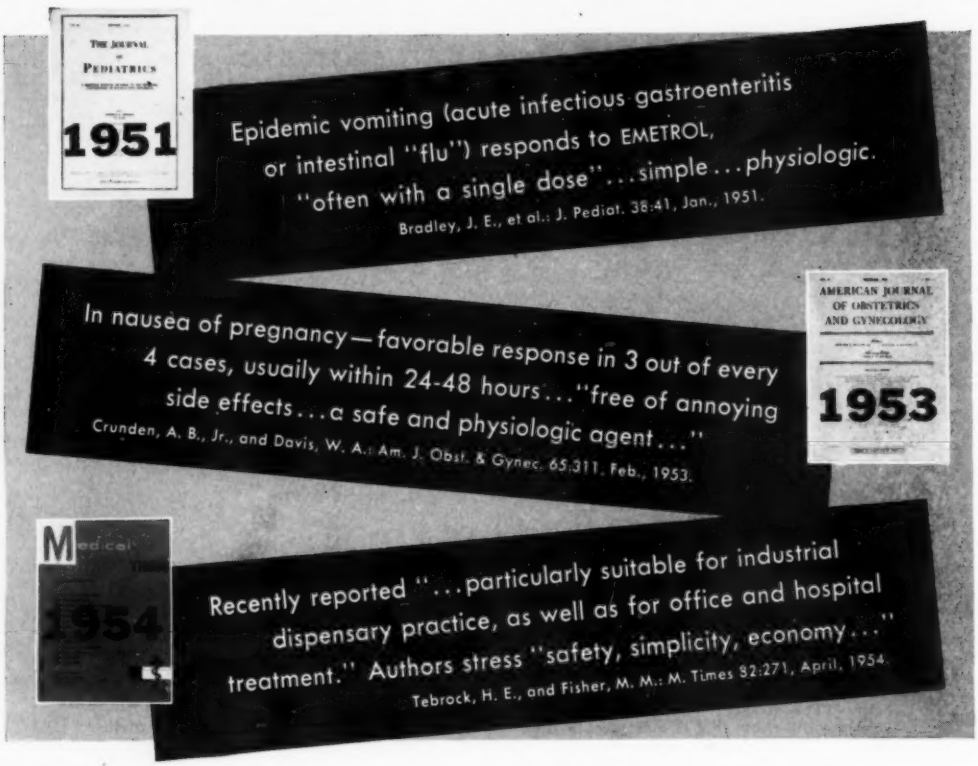
COMPOSITION: Each white, coated *Artamide* tablet contains Salicylamide (0.25 Gm.), PABA (0.25 Gm.), Ascorbic Acid (20.0 mg.) and *Organidin* (10 mg.).

SUPPLIED: Bottles of 100 and 500. *Dosage:* Two tablets three or four times daily; in acute rheumatic fever, may be increased to two tablets hourly.

Wampole LABORATORIES
Henry K. Wampole & Company, Inc., 440 Fairmount Avenue, Philadelphia 23, Pa.

THE EVIDENCE...

original and confirmatory


THE JOURNAL OF PEDIATRICS
1951
Epidemic vomiting (acute infectious gastroenteritis or intestinal "flu") responds to EMETROL, "often with a single dose"... simple... physiologic.
Bradley, J. E., et al.: J. Pediat. 38:41, Jan., 1951.
In nausea of pregnancy—favorable response in 3 out of every 4 cases, usually within 24-48 hours..."free of annoying side effects...a safe and physiologic agent..."
Crunden, A. B., Jr., and Davis, W. A.: Am. J. Obst. & Gynec. 65:311, Feb., 1953.
AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY
1953
Recently reported "...particularly suitable for industrial dispensary practice, as well as for office and hospital treatment." Authors stress "safety, simplicity, economy..."
Tebrock, H. E., and Fisher, M. M.: M. Times 82:271, April, 1954.

WHY EMETROL WORKS EMETROL quickly relaxes smooth muscle, reduces rate and amplitude of contractions, and is effective in direct ratio to the amount used.

Levenstein, I.: Report of Leberco Laboratories, Roselle Park, N. J.

EMETROL®

(Phosphorated Carbohydrate Solution)

for rapid physiologic control of nonorganic nausea and vomiting

CAUTION: EMETROL must be taken *undiluted*. Forbid oral fluids of any kind for at least 15 minutes after each dose.

Available through all pharmacies in bottles of 3 fl.oz. and 16 fl.oz.

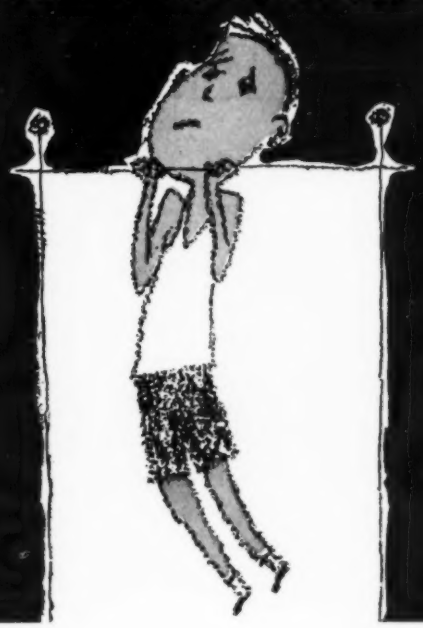
Literature and sample on request

Kinney® **Kinney & Company, Inc.** Columbus, Indiana

MORE THAN IRON ALONE may be needed for red blood cell development and maturation. "Bemotinic" supplies all factors known to be essential for maximal hemopoietic and clinical response.

"BEMOTINIC"

TO SPEED RECOVERY IN THE COMMON ANEMIAS



In addition to the convenient capsule form, "Bemotinic" is also supplied as a liquid — an extremely palatable orange-flavored preparation with no aftertaste, easy to pour, and non-alcoholic.

"BEMOTINIC" LIQUID

Each teaspoonful (5 cc.) contains:

Ferric ammonium citrate	200.0 mg.
Vitamin B_{12} U.S.P. (crystalline)	4.0 mcg.
Extractive as obtained from of fresh gastric tissue	450.0 mg.
Folic acid U.S.P.	0.33 mg.
Thiamine HCl (B_1)	1.5 mg.
Riboflavin (B_2)	1.0 mg.
Pyridoxine HCl (B_6)	0.2 mg.

No. 940 — Bottles of 16 fluidounces and 1 gallon.

SUGGESTED DOSAGE:

Adults: 1 to 2 teaspoonfuls. Children: ½ to 1 teaspoonful. Three times daily, or more as required. Preferably taken with food.

"BEMOTINIC" CAPSULES

Each capsule contains:

Ferrous sulfate exsic. (3 gr.)	200.0 mg.
Vitamin B_{12} U.S.P. (crystalline)	10.0 mcg.
Gastric mucosa (dried)	100.0 mg.
Desiccated liver substance, N.F.	100.0 mg.
Folic acid U.S.P.	0.67 mg.
Thiamine mononitrate (B_1)	10.0 mg.
Vitamin C (ascorbic acid)	50.0 mg.

No. 340 — Bottles of 100 and 1,000.

SUGGESTED DOSAGE:

1 or 2 capsules three times daily. Preferably taken with food.

NEW YORK, N. Y. Ayerst MONTREAL, CANADA

5412

ANTICYESIS

...belongs in your office

LANTEEN agrees that the means of conception control should be only yours to recommend. Recommend a simple, safe, and practical means. Recommend the double barrier – the LANTEEN accurate-fitting diaphragm and LANTEEN spermicidal jelly.

LANTEEN®

Flat Spring Diaphragm and Jelly

Ricinoleic Acid—0.50%; Hexylresorcinol—0.10%; Chlorothymol—0.0077%; Sodium Benzoate and Glycerin in a Tragacanth Base.

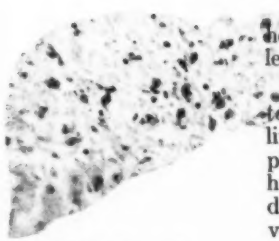
Distributed by GEORGE A. BREON & COMPANY, 1450 Broadway, New York 18, N. Y. Manufactured by

ESTA MEDICAL LABORATORIES, INC., Chicago 38, Illinois

IN THE HEAVILY OVERWEIGHT . . .

WEIGHT REDUCTION PLUS LIVER PROTECTION

Obocell® Complex



Liver protection is highly important in the dietary reduction program of the heavily overweight.

"The demonstration of the existence of hepatic damage in obesity poses the problem of protection of the liver . . ."[1]

Obocell Complex provides needed protection and corrects existing reversible liver damage. In addition, Obocell Complex curbs the appetite, suppresses "bulk hunger" and elevates the mood of the dieting patient. It supplies important vitamins, too.

In treating the heavily overweight, remember the important three-way protection of Obocell Complex:

1. Protection against hunger pangs

2. Protection for the damaged liver

3. Support for co-enzymes

Each Obocell Complex Capsule supplies:

d-Amphetamine Phosphate (dibasic)	5 mg.
Nicel*	100 mg.
Choline Bitartrate	200 mg.
Inositol	60 mg.
Thiamine Mononitrate	0.8 mg.
Riboflavin	1.2 mg.
Niacinamide	8 mg.

*Irwin-Neisler's brand of specially prepared high viscosity methylcellulose.

Bottles of 50 and 500.

1. Zelman, S.: Arch. Int. Med. 90: 141, 1952.

IRWIN, NEISLER & COMPANY • DECATUR, ILLINOIS

compare before you prescribe

modern criteria of good digitalis therapy

1. pure active principle
2. complete absorption
3. rapid onset of action
4. smooth, even maintenance
5. frequent dosage readjustment unnecessary
6. virtual freedom from gastric upset

digitaline nativelle®

conforms to the rigid criteria of a modern cardiotonic and provides oral, I.M., and I.V. forms for flexibility of dosage

compare *then prescribe...*

DIGITALINE NATIVELLE

—the original pure crystalline digitoxin

Consult your Physicians' Desk Reference for dosage information.

VARICK PHARMACAL COMPANY, INC.
(Division of E. Fougera & Co., Inc.)
75 Varick Street, New York 13, N. Y.

the most widely used Diathermy—now better than ever

INTRODUCING NEW 1955 RAYTHEON MICROTHERM®

new...Functional design in a trim, sleek cabinet with streamlined operating panel.

new...Safety monitors that prolong life of parts: automatic shut-offs protect equipment, prevent errors.

new...Warranty of two full years on all parts—a guarantee of reliable quality and craftsmanship throughout.

and...
just in time to serve the broadening range of new Raytheon Microtherm applications now being reported in professional papers.

Ask your medical equipment dealer to demonstrate the new Raytheon Microtherm, Model CMD-10.

Excellence in Electronics RAYTHEON

RAYTHEON MANUFACTURING COMPANY
Microwave and Power Tube Operations, Waltham 54, Massachusetts

PROTECTS
ON DARKEST DAYS

Physicians who recommend Pet Evaporated Milk *know* that babies in their care get automatic protection against rickets — even when mother forgets. Pet Milk *surely* contains Vitamin D at the level adequate to prevent this age-old disease and provide for best growth. Yet Pet Milk never interferes with your freedom to prescribe supplementary vitamins as indicated.

Favored Form of Milk
For Infant Formula

PET MILK COMPANY, ARCADE BUILDING, ST. LOUIS 1, MISSOURI

coordinated action against pain / spasm

SALIMEPH-C

Trademark

in skeletal muscle disorders

SALIMEPH-C,* a new synergistic combination of mephenesin and salicylamide, successfully combats the interrelated pain and spasm of arthritis, myositis, bursitis, spondylitis, and low-back pain by providing:

SUSTAINED MUSCLE RELAXATION: in a new clinical study[1] of 200 unselected cases of arthritic and myositic conditions with associated pain and skeletal muscle spasm, **SALIMEPH-C** definitely gave effective relief from pain and spasm often after other forms of therapy including ACTH and Cortisone had failed.

MAXIMUM SAFE ANALGESIA: use of salicylamide in **SALIMEPH-C** provides desired analgesia at a lower drug level[2] and is better tolerated than acid-forming salicylates.[3,4] Optimum vitamin C levels are assured by the addition of ascorbic acid.

REFERENCES: 1. Natenshon, A. L., Wisconsin M. J., in press. 2. Seeberg, V. P., et al.: J. Pharmacol. & Exper. Therap. 101:275, 1951. 3. Brodie, D. C., and Szekely, I. J.: J. Am. Pharm. A., Scient. Ed. 40:414, 1951. 4. Wegmann, T.: Schweiz. med. Wchnschr. 80:62, 1950.

*Trademark of Kremers-Urban Co.

Each tablet of SALIMEPH-C contains: salicylamide 250 mg., mephenesin 250 mg., and ascorbic acid 15 mg.

SUPPLIED: bottles of 100, 500, and 1000 tablets.

ethical pharmaceuticals since 1894

KREMERS-URBAN COMPANY

LABORATORIES IN MILWAUKEE

NOW the safest agent yet developed for decisive control of BLOOD PRESSURE with 5 important firsts

UNITENS

brand of cryptenamine

Unitensen is recommended for the patient who needs more than tranquilizing effects. It produces positive, sustained falls in blood pressure.

This is what Unitensen Tablets do . . . and with unparalleled safety

These patients experienced sustained control of blood pressure levels over prolonged periods of time.

Summary of Case Histories-Series A*

Age—Sex	BP—mm. Hg. BEFORE	BP—mm. Hg. AFTER
64—M	190/115	140/90
37—M	200/130	130/85
48—M	230/140	140/100
46—M	220/140	160/110
41—M	210/140	155/110
43—M	200/120	160/110
26—M	230/130	180/120
44—M	220/130	175/120
46—M	220/120	162/90

(Write for complete clinical data, including case histories.)

*Personal communication to Irwin, Neisler & Company.

FIRST IN MAINTAINING DECISIVE BLOOD PRESSURE CONTROL

The sole therapeutic agent in Unitensen Tablets is cryptenamine—a potent blood pressure lowering alkaloid fraction isolated by the research staff of Irwin, Neisler & Company. In the majority of cases (see chart at left), cryptenamine will lower blood pressure decisively, and will control blood pressure at the lower levels for prolonged periods of time.

FIRST IN SAFETY

Unitensen Tablets exert a central action on the blood pressure lowering mechanism. Circulatory equilibrium is not disrupted. Improved circulation and improved work of the heart are often attained, *along with the decisive fall in blood pressure.*

Unitensen Tablets have no sympatholytic or parasympatholytic action. Ganglionic blocking does not occur. Unitensen Tablets *do not* cause postural hypotension and collapse, an ever-present risk with other potent blood pressure lowering drugs. Renal function is *not* impaired.

EN®

TANNATE TABLETS

Bottles of 50, 100, 500 and 1000.

FIRST WITH DUAL ASSAY

Unitensen is biologically standardized twice, first for hypotensive response and, second, for side effects (emesis) in the dog so that a safe therapeutic range between the two is assured. In extensive clinical trials only a few isolated cases exhibited occasional vomiting.

Unitensen Tablets do not cause the serious side effects common to widely used synthetic hypotensives. Unitensen Tablets can be given over long periods of time with entire dependability. Cumulative effects have not been noted.

FIRST IN SIMPLE DOSAGE

Start with 2 tablets daily, given immediately after breakfast and at bedtime. If more tablets are needed, include an afternoon dose at 1 or 2 p.m.

FIRST IN ECONOMY

Because of lower dosage, Unitensen Tablets save your patients ⅓ to ½ over the cost of other potent blood pressure lowering agents.

Each Unitensen Tablet contains: Cryptenamine*.....2 mg.†
(as the tannate salt)

*Ester alkaloids of Veratrum viride obtained by an exclusive Irwin-Neisler nonaqueous extraction process.
†Equivalent to 260 Carotid Sinus Reflex Units.

IRWIN, NEISLER & COMPANY DECATUR, ILLINOIS

A new therapy sheds a bright light among the shadows

VITAMINERALS' exclusive new concept of modern therapy is broadening the doctor's practice and placing entire families under his watchful care.

When a patient shows symptoms of prolonged inadequacy in his nutritional diet it is seldom confined to the individual but manifests itself in the rest of the family as well in the form of SHADOW DEFICIENCY, or marginal malnutrition. The reason for this is simple. Your patient shares his meals with the other members of his household.

Not one member is immune to SHADOW DEFICIENCY caused by a family diet consistently lacking in essential nutrients. Malnutrition is a family affair. Preventive measures should be taken.

Inquire about the health of your patient's family, Doctor. The chances are that not only does he need your help, but all members of his household likewise need your nutritional guidance.

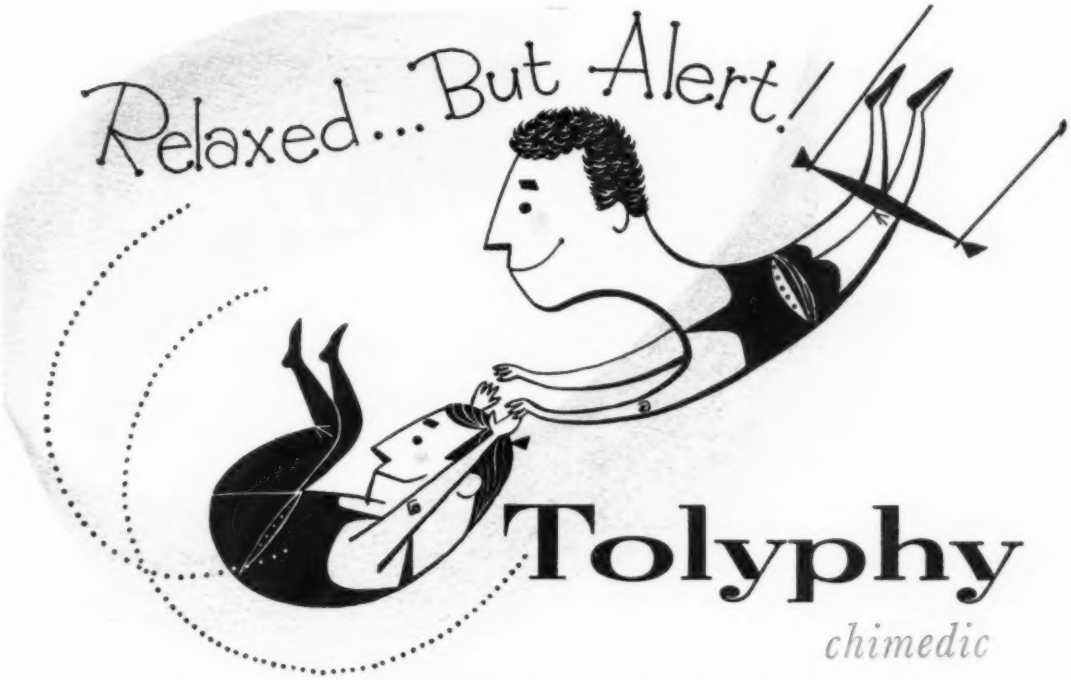
Vitaminerals' new Family Pak is designed to give adequate supplementary nutritional aid to the individual and his entire family. The formula comprises twenty-two different vitamins and minerals, including every vitamin and mineral established as essential in human nutrition, with every vitamin in preponderantly *natural* form. The cost to effectively protect a *family of three* against SHADOW DEFICIENCIES is about one-third of what is often paid for one person.

In this formula nothing has been overlooked that will add to its effectiveness as a supplement for marginal vitamin and mineral malnutrition, or SHADOW DEFICIENCY. *It is for family use.* Remember this, Doctor—when you treat your patient for a full blown deficiency condition, *treat his family, too,* for the SHADOW DEFICIENCIES from which they are apt to suffer.

Family Pak was designed to be used in encouraging this new concept of modern therapy and broaden the practices of those engaged in the art of healing.

VITAMINERALS INC.

Glendale 1, California



Smooth and pain-free range of motion with complete muscle relaxation is accomplished by Tolyphy without loss of muscle tone or depressant effect on the central nervous system.

Tolyphy combines:

a. Powerful spasmolytic action of Tolyspaz (Chimedic brand of mephenesin) with

b. Established neuromuscular effects of physostigmine and atropine

to relieve pain, increase mobility, restore muscle strength and function.

Use Tolyphy Chimedic for safe, effective relaxation of muscle spasm or neuromuscular hyperirritability in a wide range of conditions such as

ARTHRITIS
FIBROSITIS
TORTICOLLIS
BURSITIS
MYOSITIS
TENDINITIS

For a clinical trial with your own patients, send for free samples and literature on Tolyphy and Tolyspaz.

Tolyspaz (Chimedic brand of Mephenesin) is especially designed to correct emotional stress and anxiety tension states, without "clouding consciousness."[1]

[1]*J.A.M.A. 140:672 (June 25) 1949*

Please send me:

☐ Literature and samples of TOLYPHY

☐ Literature and samples of TOLYSPAZ

NAME_____

ADDRESS_____

CITY_____ ZONE_____

STATE_____

CHICAGO PHARMACAL COMPANY

5547 N. Ravenswood Ave., Chicago 40, Illinois

PACIFIC COAST BRANCH: 381 Eleventh St., San Francisco, Calif. • SOUTHERN BRANCH: 240 Spring St., N. W., Atlanta, Ga.

ANNOUNCING

the New Medi-Sonar Portable

ULTRASONIC GENERATOR

This unprecedented new Model 1100 *PORTABLE* MEDI-SONAR Ultrasonic Generator is unquestionably the finest instrument available anywhere at any price. Its claim to *absolute superiority* rests in several extremely important factors, most of which are exclusive with Dallons. Its incomparable quality gives more dollar-for-dollar value... more power, better control, finer engineering. Price, complete **$535.00 f.o.b. Los Angeles**

Dallons 1st IN ULTRASONICS

- "Console" quality and output at "portable" prices.
- Guaranteed minimum output total of 20 watts—Actual output, not just rated.
- Larger precision-ground quartz crystal—10 sq. cm.
- Specially designed safety transducer.
- Dual-scale meter for "at-a-glance" direct reading of total watt output and watts per sq. cm.
- Stepless output control for accurate dosage duplication.
- Even distribution of energy at low temperatures in full cylindrical pattern.
- Resonance control for positive tuning under all conditions.
- All metal, well ventilated, case with protective cover.
- Written one year guarantee on both machine and transducer.
- Made under U.S. Patents, U/L inspected and approved, CSA approved, and Certified under FCC regulations.

Professional Literature on Request

DALLONS LABORATORIES, INC.

"Superior Equipment for Superior Performance"

5066 Santa Monica Blvd., Los Angeles 29, Calif.

FILL OUT AND MAIL THIS COUPON TODAY

Please send full information

NAME _____

STREET _____

CITY _____ STATE _____

☐ Send Literature ☐ Have Representative Call

impractical patent...

Parachute fire escape—wearer merely leaps from window. Cushioned soles protect user's feet, but a slight oversight in design seems to make the fire a lesser hazard than a broken neck. Pat. No. 221,855. Nov. 18, 1879.

patently practical

DORBANE®

1,8-DIHYDROXYANTHRAQUINONE

peristaltic stimulant

selective, persuasive, crystalline-pure!

DORBANE acts *specifically* on the colon... increases tonus and peristalsis without affecting motility of the small intestine. Its gentle action induces regular, smooth evacuations which promote re-establishment of normal bowel function.

DORBANE is nontoxic, nonhabituating... does not require increased dosage with continued use. It is safe and effective for children, adults and geriatric patients.*

DORBANE is equally effective in occasional and chronic constipation. Particularly valuable in pregnancy, it is also extremely useful in constipation resulting from blocking agent therapy (as hexamethonium) used in hypertension and "...can replace other agents... in postoperative anorectal cases."*

"...Clinical trials on a variety of patients re-emphasize the proven safety and efficacy of this laxative compound."*

Dosage: 1 or 2 tablets before retiring; for children, in proportion. Available: 75 mg. tablets, bottles of 100.

*Marks, M. M.: Am. J. Digest. Dis. 20:240, 1953.

Schenlabs SCHENLEY LABORATORIES, INC., NEW YORK 1, NEW YORK

10254 DORBANE IS SCHENLEY'S REGISTERED TRADEMARK FOR A LAXATIVE.

*TWO-FOLD SERVICE—

To The Profession

Professional Foods continue to do their honest best to predicate the needs of the Osteopathic profession in correcting basic and fundamental

NUTRITIONAL TROUBLES

*Since the troubles arise largely in the CHRONIC PATIENT, we have planned our products to aid the doctor of this patient.

*We offer a complete and basic evaluation for the CHRONIC PATIENT at a considerable financial savings in order that treatment for the CHRONIC PATIENT can be directed properly from the start.

Write for added information.

PROFESSIONAL FOODS 219 First St. S.W., Cedar Rapids, Iowa

PIN DOWN PIN WORM INFESTATIONS WITH

PARAZINE

NEW- EFFECTIVE- TASTY- WELL TOLERATED — ORANGE FLAVORED SYRUP

Parazine is readily accepted by all age groups and is in itself capable of clearing infestations of *Enterobius vermicularis*. Enemas and laxatives are NOT necessary. It is virtually nontoxic in recommended doses and is usually well tolerated. Clinical studies* with the active ingredient of PARAZINE have demonstrated its unusual effectiveness — over 80% of the cases having been cleared by one course of treatment.

Send for technical information TODAY.

*White, R.H.R., and Standen, O.D., Brit. Med. J., 2:755, 1953

FORMULA
Each 5 cc. (1 TSP) provides —
PIPERAZINE CITRATE equivalent to 0.5 Gm. PIPERAZINE HEXAHYDRATE
Available in —
Handy 4 oz. Bottles
Economical Pints

TUTAG **S. J. TUTAG AND COMPANY**
19180 MT. ELLIOTT AVENUE • DETROIT 34, MICHIGAN

At long last . . .

The Comprehensive Antispasmodic for both skeletal and associated smooth muscle spasm . . . . . .

℞

EXPASMUS, *a new* combination of antispasmodics, plus a powerful analgesic—in *single prescription form* effectively reduces both skeletal and smooth muscle spasm, while affording more rapid release from pain.

Though skeletal muscle *pain-spasm* often engenders secondary smooth muscle spasm, no single antispasmodic preparation free of belladonna, barbiturates or amphetamine has heretofore been formulated to treat both types of spasm. In this respect, Expasmus is unique as it combines the smooth muscle relaxant, dibenzyl succinate and the skeletal muscle relaxant, mephenesin with the powerful analgesic, salicylamide to provide safe, fast-acting and *comprehensive* therapy.

Description: Each tablet of Expasmus contains dibenzyl succinate, 125 mg.; mephenesin, 250 mg.; salicylamide, 100 mg. Packed in bottles of 100 tablets, on your prescription only.

Indications and dosage: For relaxation of skeletal and associated smooth muscle spasm; relief of arthritic and low back pain; as a mild non-barbiturate sedative and relaxant in tension —Average dose, two tablets every four hours. Maximum daily dose, twelve tablets.

Samples Available to Physicians

MARTIN H. SMITH CO.
150 Lafayette St., New York 13, N. Y.
Manufacturers of ethical products for over half a century.

EXPASMUS

Moritz—The Pathology of Trauma

By ALAN RICHARDS MORITZ, M.D.

Professor of Pathology and Director of the Institute of Pathology, School of Medicine, Western Reserve University, Cleveland, Ohio

New 2nd Edition

Dr. Moritz surveys the leading causes of injuries produced by violence, including those caused by industrial accidents and war. He discusses the manner in which they produce functional and structural disturbances, their pathologic characteristics, pathogenesis, sequelae, and collateral evidence of medicolegal interest. The enlarged *new 2nd edition* contains a new chapter on medicolegal autopsy, a new discussion of the psychosomatic complication of trauma, and a summary of post-traumatic systemic metabolic disturbances that constitute the general adaptation syndrome. Other subjects which are new or rewritten include injuries of the central nervous system and of the urogenital tract, trauma and infection, injuries due to high explosives, mechanisms and complications of secondary shock, trauma and heart failure, respiratory tract injuries, and other important data.

New 2nd Edition. 414 Pages. 126 Illustrations. $8.50

Fishberg—Hypertension and Nephritis

By ARTHUR M. FISHBERG, M.D.

Director of Medicine, Beth Israel Hospital, New York City; Clinical Professor of Medicine, Post-Graduate Medical School of New York University

New 5th Edition

Direct from the consultation room and bedside comes the clinical guidance this book gives on diagnosis and treatment of nephritis and hypertension. Diagnosis by methods almost universally available is emphasized throughout. Supplementing the primarily practical orientation are the recent great basic advances in understanding of normal and impaired renal function, edema and hypertension. For this *new 5th edition* the book has been virtually rewritten and enlarged by 207 pages. Much new material, including 7 new chapters, makes it almost a new work. The author always bears in mind that the vast majority of patients with hypertensive and renal diseases are cared for by physicians with limited laboratory facilities. Dr. Fishberg's volume has long been accepted as the standard work on this subject.

New 5th Edition. 986 Pages. 49 Illustrations. $12.50

Washington Square **LEA & FEBIGER** Philadelphia 6, Pa.

"THE NEAREST APPROACH TO THE CONTINUOUS INTRAGASTRIC DRIP FOR THE AMBULATORY PATIENT".*

NULACIN

A pleasant-tasting tablet...to be dissolved slowly in the mouth...not to be chewed or swallowed...made from milk combined with dextrins and maltose and four balanced non-systemic antacids...**

Promptly stops ulcer pain...holds it in abeyance...and hastens ulcer healing.

In tubes of 25 at all pharmacies. Physicians are invited to send for reprints and clinical test samples.

Continuous gastric anacidity for prompt relief in peptic ulcer, gastritis, hyperacidity, pregnancy heartburn.

*Steigmann, F., and Goldberg, E., J. Lab. & Clin. Med. 42:955 (1953).

**Mg trisilicate, 3.5 gr.; Ca carbonate, 2.0 gr.; Mg oxide, 2.0 gr.; Mg carbonate, 0.5 gr.

HORLICKS CORPORATION
Pharmaceutical Division • RACINE, WISCONSIN

microfilm roentgenograms

ONLY Micro X-Ray Recorder Offers These Advantages

Two lens—give full 15½"x 18½" or 10" x 12" coverage with diagnostic detail and density. **Special panel switch**—lightens darkened or overexposed films. **1100 to 4400 X-Ray films per roll**—saves you time and money. **Use of 5 films**—lets you use special films to suit your needs of sensitivity or economy.

AT THE LOWEST PRICE OF ALL
Only $1121.25

The Micro X-Ray Recorder will pay for itself in space and filing cabinets saved
For details WRITE FOR FREE LITERATURE

MICRO X-RAY RECORDER
1941 N. Western Avenue • Chicago 47, Illinois

4 out of 5 former fatties...

gain it right back!

the *Am Plus*® post-diet plan

for the 80%
who fail to sustain
weight loss
*after the diet**

*Aaron, H.:
Weight Control,
Consumer Reports
17:100 (Feb.) 1952.

Rx Ronnic

Just one AM PLUS capsule daily, taken when hunger becomes excessive: before the day's "big" meal, before a club lunch or dinner, at snack time. The patient decides when.

A unique combination of dextro-amphetamine plus the original formula of 19 important vitamins and minerals, AM PLUS rehabilitates post-dieting habits while it augments nutritional intake.

536 Lake Shore Drive, Chicago 11, Illinois

ANNOUNCING THE PUBLICATION OF

Color Atlas of Pathology

VOLUME II

Prepared under the Auspices of the

U. S. NAVAL MEDICAL SCHOOL

of the* NATIONAL NAVAL MEDICAL CENTER *Bethesda, Maryland

Subjects Covered: Endocrine System, Including Pituitary, Thyroid, Parathyroid, Adrenals and Pancreas • Gynecology and Obstetrics, Including Reproductive Organs, Genitalia and Breasts • Male Genital Tract • Skin

Illustrated with 1032 figures in color on 343 plates **$20.00**

Copies of Volume I still available

Subjects Covered: Hematopoietic System • Reticulo-Endothelial System • Respiratory Tract • Cardiovascular System • Liver • Alimentary Tract • Kidney and Urinary Tract • Musculoskeletal System.

Illustrated with 1053 figures in color on 365 plates **$20.00**

J. B. LIPPINCOTT COMPANY

PHILADELPHIA • LONDON • MONTREAL

LIPPINCOTT BOOKS

PHILADELPHIA
LONDON
MONTREAL

J. B. LIPPINCOTT CO. East Washington Square, Philadelphia 5, Pa. In Canada — 2083 Guy Street, Montreal

Please enter my order and send me:

☐ COLOR ATLAS OF PATHOLOGY, Vol. II $20.00
☐ COLOR ATLAS OF PATHOLOGY, Vol. I $20.00

NAME..... ☐ Charge My Account

ADDRESS..... ☐ Check Enclosed

CITY.....ZONE.....STATE.....

The product you have been looking for to increase appetite and growth

OREXIN
(STUART)

UNIQUE COMBINATION

combines the 3 vitamins important for appetite and growth.

ONE TABLET CONTAINS:

B_{12} . . . . . 25 mcg.
B_6 . . . . . 5 mg.
B_1 . . . . . 10 mg.

DOSE: 1 tablet daily

UNIQUE FORM

Pleasant tasting, specially constructed soft tablet (Softab†) melts in the mouth.

If liquid is preferred OREXIN tablet dissolves quickly in teaspoon of water.

Available at all pharmacies in bottles of 30 and 100 tablets

THE STUART COMPANY Stuart Pasadena 1, California

† *Trade Mark*

The best treatment for constipation

Chobile enables you to re-establish normal colonic function in chronic constipation—the common complaint in middle and advancing years. With Chobile you can break the vicious laxative habit.

Chobile contains necessary cholic acid conjugates which maintain water balance to prevent dehydration of the stool and favor normal peristalsis.

depends on proper dosage

Begin with 3 or 4 tabules with meals until a soft, putty-like stool is obtained. Reduce dosage accordingly. In severe cases, an enema should precede Chobile therapy.

CHOBILE®

Each Chobile tabule contains:

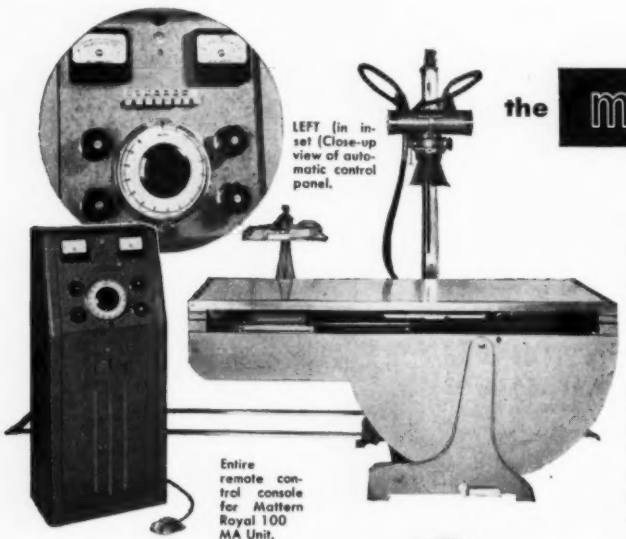
Cholic Acid (conjugated as sodium glycocholate and sodium taurocholate) ..... 1½ gr.

Ketocholanic Acids ..... 1½ gr.

Bottles of 50, 100, 500 and 1000 tabules.

Write for generous trial samples.

IRWIN, NEISLER & COMPANY • DECATUR, ILLINOIS



LEFT (in inset (Close-up view of automatic control panel.

Entire remote control console for Mattern Royal 100 MA Unit.

the **mattern** | low priced **royal 100** MA unit *with rotating anode tube*

better value dollar for dollar . . . PLUS the features that spell x-ray efficiency.

The Mattern Royal 100 offers an unusual dollar-for-dollar value which is particularly remarkable in the low-cost tilt table field. Among its special features are:

- Completely automatic control (see illustration).
- Rotating anode tube—need not be removed when changing position of table. Counterbalanced 12″x16″ fluoroscopic screen and tube—travel in unison—raise, lower, or angle as desired.
- Hand tilt mechanism which permits use of table in either horizontal or vertical plane. Tube stand mounted separately on tracks, allowing greatest flexibility in positioning.
- Bucky diaphragm on full-length track beneath table. Bucky tray has self-centering and locking device . . . takes cassettes up to 17″x17″.
- Mattern design and engineering—resulting in simplicity of installation and long, trouble-free operation. Mattern equipment calls for the minimum in repair service.

See your local Mattern dealer, or write direct to us for information.

MATTERN X-RAY

F. MATTERN MFG. CO.

4635-4659 NORTH CICERO AVENUE • CHICAGO 30, ILLINOIS

The Majority of Your Arthritics Need Only...

Pabirin®

POTENTIATED SALICYLATE THERAPY

RAPID ABSORPTION
FOR PROMPT ACTION

In Capsule Form for Most Rapid Absorption

EACH CAPSULE CONTAINS:

Acetylsalicylic acid	5 gr.
Para-aminobenzoic acid	5 gr.
Ascorbic acid	50 mg.

SODIUM-FREE

The high salicylate blood levels produced by Pabirin quickly lead to a degree of analgesia sufficient to control discomfort in the majority of arthritics. Concomitantly, joint mobility is improved, not only through prolonged pain relief but also through increased elaboration of endogenous cortisone. Thus in most arthritic patients, Pabirin alone is adequate therapy.

Pabirin is rapidly effective because it is formulated in quickly disintegrating gelatin capsules which release their contents within a matter of minutes. It is well tolerated since it contains acetylsalicylic acid, widely regarded the salicylate of choice. Its PABA retards urinary salicylate loss, and its generous content of ascorbic acid aids in preventing depression of blood vitamin C levels.

Average dose, 2 to 3 capsules 3 or 4 times daily.

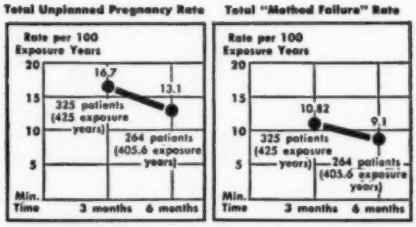
SMITH-DORSEY • **Lincoln, Nebraska** *A Division of* **THE WANDER COMPANY**

PSYCHOLOGIC MOTIVATION AND CONCEPTION CONTROL

Psychologic motivation, defined as "... the sincere, urgent, uncomplicated desire to remain nonpregnant..." is an increasingly recognized factor in the success or failure of contraceptive measures.[1]

One of the factors influencing motivation, namely, parity, was appraised by Guttmacher[1] and associates in a three-year study of the jelly-alone [RAMSES® VAGINAL JELLY] method for contraception. A carefully selected group of 325 postpartum clinic patients used RAMSES VAGINAL JELLY for periods representing a total of 425 patient years of exposure. The technic showed marked effectiveness but was especially successful "among patients of lower parity."

Although the method was highly dependable, some unplanned pregnancies did occur. The pregnancies were divided into "patient failures" and "method failures." Patients readily admitting omission or irregular use of the jelly were classified in the first group, while those claiming regular and faithful use of the jelly were grouped in the latter category.



Comparison of conception control with RAMSES VAGINAL JELLY in patients using the method for 3-36 months and 6-36 months.[1]

During 425 patient years of exposure in 325 women using the jelly, the total unplanned pregnancy rate was only 16.7 per 100 patient years of exposure. When the "method failure" for the entire group is calculated, the unplanned pregnancy rate drops to 10.82 per 100 patient years of exposure. When only those patients who used the jelly-alone technic for six months and longer are considered (the usual length of time accepted for valid comparisons) the pregnancy rate is decreased markedly. This indicates that familiarity with and reliance on the method are probably also important. In 264 such patients, during 405.6 patient years of exposure, the total unplanned pregnancy rate was only 13.1 per 100 years of exposure, and the method failure rate dropped to 9.1 per 100 years of exposure.

Fitting the method to the patient

It has been demonstrated that motivation, parity, and patient-intelligence play important roles in the selection and the successful use of a conception control method and, therefore, that the final decision regarding the selection of method must be left to the physician who is fully cognizant of all these points.

When in the judgment of the physician, parity, anatomic factors, or motivation indicates the use of the diaphragm-and-jelly method of contraception, the RAMSES® TUK-A-WAY® Kit is recommended. The RAMSES® diaphragm is flexible and cushioned — provides an optimum barrier and utmost comfort. In combination with RAMSES jelly it offers an unsurpassed contraceptive technic. Both products are **accepted by the appropriate Councils** of the American Medical Association.

*Active agent, dodecaethyleneglycol monolaurate 5%, in a base of long-lasting barrier effectiveness.

1. Finkelstein, R.; Guttmacher, A., and Goldberg, R.: Am. J. Obst. & Gynec. 63:664, Mar., 1952.

JULIUS SCHMID, INC. *gynecological division*
423 West 55th Street, New York 19, N.Y.

rauwolfia in its optimal form

• ***Rauwiloid is not the crude rauwolfia root.*** Rauwiloid presents the total hypotensive activity of the pure whole Rauwolfia serpentina (Benth.) root —but it is freed from the inert dross of the whole root and its undesirable substances such as yohimbine-type alkaloids.

• ***Rauwiloid is not merely a single contained alkaloid of rauwolfia.*** Rauwiloid provides the balanced action of the several potent alkaloids in rauwolfia; reserpine—regardless of the brand name under which it is marketed—is only one of the desirable alkaloids in Rauwiloid.

• ***Rauwiloid contains, besides reserpine, other active alkaloids, such as rescinnamine,***[1,2] reported to be more potent than reserpine.

• ***Rauwiloid is the original alseroxylon fraction of unadulterated Rauwolfia serpentina (Benth.)***— rauwolfia in its optimal form—virtually no side actions—no known contraindications. It rarely needs dosage adjustment. The dose for most patients is 2 tablets (2 mg. each) at bedtime.

If you have prescribed rauwolfia in other forms, it will not take many patients to convince you that Rauwiloid serves better. Please write for clinical samples.

1. Klohs, M. W.; Draper, M. D., and Keller, F.: J. Am. Chem. Soc. *76*:2843 (May 20) 1954.

2. Cronheim, G.; Brown, W.; Cawthorne, J.; Toekes, M. I., and Ungari, J.: Proc. Soc. Exper. Biol. & Med. *86*:110 (May) 1954.

IN HYPERTENSION

Rauwiloid®

Riker LABORATORIES, INC. LOS ANGELES 48, CALIF.

HERE'S HOW

POLYSAL®

HELPS YOUR PATIENTS

1

POLYSAL prevents and corrects hypopotassemia without danger of toxicity[1]

2

POLYSAL corrects moderate acidosis without inducing alkalosis[1]

3

POLYSAL replaces the electrolytes in extracellular fluid[1]

4

POLYSAL induces copious excretion of urine and salt[1]

Polysal, a *single* I.V. solution to build electrolyte balance, is recommended for electrolyte and fluid replacement in all medical, surgical and pediatric patients where saline or other electrolyte solutions would ordinarily be given. Available in distilled water—250 cc. and 1000 cc. and in 5% Dextrose—500 cc. and 1000 cc.

INSTEAD OF UNPHYSIOLOGICAL "PHYSIOLOGICAL SALINE" MAKE

POLYSAL

YOUR ROUTINE PRESCRIPTION

1. *Fox, C. L. Jr., et al. An Electrolyte Solution Approximating Plasma Concentrations with Increased Potassium for Routine Fluid and Electrolyte Replacement. J. A. M. A., March 8, 1952.*

CUTTER

CUTTER Laboratories

BERKELEY, CALIFORNIA

The Journal of the American Osteopathic Association

PUBLISHED MONTHLY BY THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 54, No. 3 — 212 East Ohio St., Chicago 11, Ill. — November, 1954

COPYRIGHT, 1954, BY AMERICAN OSTEOPATHIC ASSOCIATION

Kyphosis*

DAVID HEILIG, B.A., D.O.
Drexel Hill, Pa.

Changes in the anteroposterior curves of the human spine must concern us intimately, not only because of our interest in the possible etiologic relations of spinal lesions to the development of such curves, but also because, in addition to the problem of management of frank pathologic conditions, there is the problem of complication of other spinal changes by varying degrees of abnormal curvature.

DEFINITIONS AND HISTORICAL NOTES

By definition, kyphosis, originating from the Greek, means any spinal curve the convexity of which is posterior, but the term particularly applies to the dorsal spine.[1] For the moment, let us recall that all of the vertebrae of the body are built on a similar pattern; that the bodies of all are anterior; that the spinous processes are posterior; and that the posterior convexity indicates a tendency for the approximation of the bodies anteriorly, separation of spinous processes posteriorly, increased strain on the posterior ligaments to varied extents (notably the interspinous and supraspinous or their homologous structures, the ligamentum flavum or its homologs), and some degree of separation or forward movement of the upper vertebra of any two at the articular facets. These factors apply in all areas, the degree of antexion or forward bending required in the different regions to be considered pathologic depending on the nature of the "normal" curves achieved by man in the upright position. A posterior convexity in the lumbar region would be considered far more pathologic than a similar dorsal curve, because the normal position of the former is with a posterior concavity. This is just as obviously true in the cervical region. And let us remember that abnormal straightening of the lumbar or cervical curves may be quite as significant from the osteopathic standpoint as a marked increase in the convexity of the dorsal area.

One of the most interesting historic notes on this subject is the fact that Hippocrates recognized and undertook to treat many different forms of kyphosis. The two most common conditions probably seen by him were the gibbus of Pott's disease and that formed as a result of trauma, probably compression fractures. He gives two etiologic factors in addition to those of trauma and disease, namely, constitutional tendency and senility; together these constitute a fairly complete classification of this condition. Hippocrates, because of his emphasis on manipulative means of treatment, ranks high in the minds of osteopathic physicians. He treated posterior convexities with some degree of success by means of longitudinal traction plus downward pressure on the prone patient. He cites an unsuccessful attempt to use the patient's own weight with a fulcrum made by an inflated goat's bladder under the gibbosity. He makes mention of the practice of succussion and describes the best means of producing it with a ladder, but gently decries this method. In producing pressure on the prone patient he suggests the arrangement of a padded beam, with one end inserted into a slit in the wall and the other operated by the physician, apparently much in the manner of the Taplin bar.[2]

We owe most of our present-day classifications of kyphoses to more modern scholars. According to Lewin,[3] Scheuermann in 1921 described kyphosis dorsalis juvenilis, a condition affecting the epiphyses at the superior and inferior borders of the vertebral bodies, and sometimes referred to as Scheuermann's disease. Snoke described the "apprentice's kyphosis." Hanson suggested that changes in the "zones of ossification" might precede the changes of kyphosis dorsalis juvenilis. Buchman pointed out the distinction between vertebral osteochondritis and vertebral epiphysitis as one of age and development.

The term "kyphoscoliosis" is usually applied to conditions of lateral curvature in which the rotation of the spine has produced further collapse so as to markedly increase the posterior convexity. On examination of specimens at the Philadelphia College of Osteopathy it has seemed apparent that the collapse was sufficient in the dorsal area to put considerable dependence on the rib cage and sternum to maintain any degree of uprightness in this portion of the body. Kyphoscoliosis may also apply to the cervicodorsal type of prominence with cervical scoliosis.

Thus far this paper has been devoted to conditions which when seen are usually considered irreducible deformities. It is my belief that the different body types may have varying tendencies toward the production of posterior convexity. To this end I will discuss the body types of Goldthwait and his associates[4] which are classi-

*Presented as a part of the Symposium: Dynamics of Posture, at the Fifty-Eighth Annual Convention of the American Osteopathic Association, Toronto, Canada, July 13, 1954.

fied as slender, stocky, and intermediate. The first has been described as slender, narrow-backed, linear (Lucas) or splanchnoptotic (Glénard). Goldthwait mentions several other homologous classifications, in all of which the thorax is about half in thickness its dimension in breadth, the sternum and costal cartilages are flat, and there is a greater downward inclination of the ribs. The second classification, the heavy or stocky type, is also characterized as broad-backed and lateral (Lucas). In these the chest is convex anteriorly, the ribs more horizontal, and the vertebrae large and heavy. Visualizing such persons clinically we think of the slender type with the thin chest and long vertebral column as being more prone to visceroptosis and, with the forward and downward drag, as having an increase in lumbar lordosis and dorsal kyphosis.

The heavy-set individual is less easily predisposed to visceroptosis, and his heavier vertebral structure is better adapted to his weight-bearing. However, we should not lose sight of the fact that low-back weaknesses due to congenital deformity and/or superimposed strain often result in lordotic or spondylolisthetic conditions in this build and might also result in compensatory dorsal kyphoses.

CLASSIFICATION OF KYPHOSES AND CONSIDERATIONS OF POSTURE

The following classification of kyphoses based on etiologic factors suggests itself: hereditary, congenital, developmental, and acquired. The hereditary type is referable to tendencies, particularly in the slender or splanchnoptotic build, which have been exhibited by father, mother, or some other forebear. The congenital type comprises kyphotic development due to infection, trauma, thrombotic or embolic phenomena, or trophic disturbances occurring at or before birth. The developmental type is distinguished from the congenital only on the basis of its appearance after rather than at or before birth, but before or during adolescence; it is caused by infection, trauma, thrombotic or embolic phenomena, or trophic disturbances before the completion of ossification. Into this category fall dorsal vertebral osteochondritis, vertebral epiphysitis including kyphosis dorsalis juveniles (Scheuermann) and Calvé's vertebral epiphysitis, and probably dysostosis multiplex resulting in kyphotic deformity.

The category of acquired kyphoses has been arbitrarily set up to include those conditions which are much more likely to be seen in practice than other types, and which is possibly more amenable to therapy. In this category are placed compensatory kyphoses; traumatic, infectious, and deficiency kyphoses; and degenerative kyphoses.

The compensatory group includes those conditions of the dorsal and cervicodorsal spine resulting from the necessity of the body to compensate in an anteroposterior plane for gravitational changes in the lumbar or sacral areas. The most common example of such is lumbar lordosis especially when accompanied by a sacrum more horizontal than usual. With the weight of the viscera forward, the pull of the psoas muscles on the lumbar bodies tends to make necessary a dorsad force in the dorsal area. It is interesting to note however that such a strain in the pregnant female usually results in a continuation of the backward thrust until the shoulders themselves are held back and the "pride" of pregnancy results, rather than kyphosis. One explanation lies in the fact that the displacement of space within the pelvis by the fetus results in an upward (cephalad) thrust on the abdominal and thoracic contents, making the stance described above a necessity. Another explanation may be that pregnancy is normally a physiologic process, but in the lordotic patient an added factor may be the general debility or strain which has helped in the original production of the lordosis as well as the kyphosis. Since long muscles of the back are affected throughout and the dorsal strain cannot be carried completely to the shoulder girdle, the thorax collapses slightly to depend on its lateral and anterior supports (the ribs, costal cartilages and sternum). If such is the case, and this is a projection of osteopathic thinking, correcting the lordosis and its aggravating factors is still but a part of the management and normalization in the dorsal area is but a part. There must be included in the basis for therapy consideration of the entire patient. The therapy should enable the patient to maintain his highest reacting efficiency throughout and should take into consideration factors affecting his metabolic state, his calcium-phosphorus ratio, his state of protein and carbohydrate metabolism, the trophicity of his entire musculoskeletal system, et cetera.

There are of course specific considerations of such aggravating factors as occur in the pronation syndrome, in the excessive use of high heels, and in all of the factors of body mechanics affecting the lower extremities and sacral and lumbar areas. The factor already implied but still to be analyzed is posture. The dominance of posture in medical thinking to the exclusion of altered vertebral mechanics, especially as specific spinal lesions, is a major factor in retarding progress in the field of body mechanics. There is such a thing as good posture, or correct sitting and standing position, correct gait, and general body grace, but these are the "normal" and therefore the ends, aims, or results of correction of altered vertebral mechanics.

The changes of body position required by the upright stance have resulted in pelvic and lower extremity changes through a long period of evolution (increased width of the pelvis, size of the glutei, and breadth and depth of pelvic attachments of the sacrospinalis muscles and changes within the quadratus lumborum and multifidus).[5] The slow development of the secondary curves in the growing infant is obvious; first the cervical curve develops as the head is held up, and the lumbar curve appears as standing is achieved[6] (the infant may sit quite well before requiring the changed lumbar curve). It is possible for additional changes to occur as a result of prolonged occupational strains, especially those starting in the preadolescent period. The shoemaker's dented chest and curved back are examples of this, but these are fairly unusual. The familiar slouched sitting and standing positions are usually the result of fatigue or pain rather than the cause. A child sits crookedly because he can put the strain on ligaments or a supporting forearm and relieve overfatigued muscles. In the presence of vertebral strain, osteopathic lesions, or facilitated somatic segments, this fatigue, often asymmetric, will occur sooner and the "poor posture" appear to be more habitual. I am sure that every osteopathic physician has found such conditions in children with poor posture and has probably seen an improvement in posture (the end-result) following alleviation or normalization of the underlying structural strains.

While considering this subject, I should like to analyze further the concepts of posture. The standing and walking positions require the downward position of the femur pulling the pelvis and lumbar spine for-

ward. The dorsal area compensates. In a normally compensated individual the dorsal curve is only slightly noted because of the overlay of musculature and the bulk of the shoulder girdle. The cervical curve is not overly compensated so that the chin is "in." There is no tension on the shoulder muscles and the arms drop loosely to the sides, not to the front of the thighs or to the gluteal folds. If this individual is on his feet all day, he comes home and probably slouches in a soft chair which is considered detrimental to proper posture. He doesn't care, as the continuing market in soft, low, overstuffed chairs testifies. Is he doing so wrong? His lumbar spine has been convex anteriorly all day. He slouches, and it straightens or becomes almost convex posteriorly. The posterior ligaments are gently stretched, the intervertebral foramina are slightly opened, some lumbar lymphatic drainage is facilitated (more so, of course, in a "contour" type chair). Prolonged posture such as this would probably be damaging, but short periods may be refreshing. In this same chair, the abdominal muscles are relaxed, a deep breath is taken, and simultaneously the shoulders and head are thrown back into the chair; the elbows may be propped on the sides of the chair and the shoulders and upper ribs raised.

However, this normal individual may have a sedentary job. We as physicians tell him to sit straight with his knees and legs in front of him; this position encourages the pelvis to rotate posteriorly. We require a thrusting forward of the chest that produces excessive fatigue of the iliocostalis, lower fibers of the trapezius, and all the muscles of the mid- and low-dorsal areas.. If he drops his knees, straightening the angle between the body and the thighs (the position on the old-fashioned high stool, at the soda fountain, in a saddle, or astride a chair), he can maintain the erect position of the rest of the vertebral column with considerably less muscular strain. This man may spend his working hours in long shifts of driving. Here we arrange to place him in living room comfort, sufficient to enhance his falling asleep at the wheel. Since even in the most modern type drives, one foot is still required occasionally, that foot must act through leverages from the buttocks and back. A real aid to him may be a piece of composition board or plywood approximately 14 by 18 inches placed under him so that he gets the full benefit of the multiple springs but has a firm support for leverage and sits higher and straighter. The unshaped board may become bothersome after a time, but perhaps that is the time for him to rest from driving anyway.

There is another kyphosis which may be considered compensatory, but in this case it is compensatory to respiratory requirements. The stocky or heavy-set individual may be more prone to this because of the shortness of the thoracic cage and the more horizontal position of the ribs. It is particularly seen in the advanced changes due to emphysema. The emphysematous or barrel chest, with its anteroposterior diameter almost equal to its transverse, usually shows an increase in the normal dorsal curve. I do not suggest that this is a factor in the development of emphysema, but it may easily become a complicating factor because of a cycle of altered somaticovisceral and viscerosomatic reflexes.

The classification of acquired kyphoses which includes those due to trauma and infection was broadened to include deformities produced by early rickets, poliomyelitis, or other diseases impairing normal bone and muscle development, such as carcinoma and osteomalacia. Degenerative kyphoses form the final category in the acquired group. Degenerative diseases of the bones and joints would be complicating factors to dorsal kyphosis. The most marked changes, however, would be in relation to the intervertebral disks; destruction of their substance by trauma, altered trophicity, or senility results in an increase in the forward convexity inasmuch as the dorsal vertebrae are normally narrower anteriorly, and the settling of the bodies on each other is not accompanied by any appreciable narrowing of the zygapophysial joints.

ANATOMIC CONSIDERATIONS

Dorsal kyphosis is of concern not merely because it is a symptom of other pathologic changes but because, in itself, it may produce undesirable changes. I am indebted to Dr. Angus Cathie[7] for much of the anatomic emphasis on the unwanted side effects of this condition. First there is an impairment of normal respiration and the vital capacity of the lungs is decreased; this is an important consideration in the employment of orthopedic appliances for any dorsal deformity. Kleinberg[8] has pointed out that, in the case of scoliosis, there is decreased mobility of the chest wall, which in turn will produce impairment of venous return to the heart; impaired lymphatic drainage, not only of the thoracic duct but of the right and left lymphatic ducts draining the head and neck; impaired mobility of the pleura and pericardium; impaired drainage of the bronchioles and bronchi; and finally disturbances to the lateral chain of the sympathetics, not only from lessened mobility where the chain lies over the heads of the ribs, but because the sheath of the chain is supplied by tiny arteries and veins given off from the intercostal vessels to form a fine anastomosis over the chain. Altered rib mobility may affect the intercostal muscles and hence alter proprioceptive afferent fibers to the cord in these areas.

The fascia, including the mesenteries, will be affected, especially where there is some degree of associated visceroptosis. The drag on the mesenteries means loss of elasticity, impaired arterial supply and venous drainage, and ultimately lowered functional capacity of the affected organs. The lessened mobility of the chest increases the requirements of the diaphragm for respiration, and this structure is already adversely affected by the visceral drag, as well as by mechanical or trophic disturbances resulting from the altered position of the crura which are attached as low as the second and third lumbar vertebrae and already involved by the associated lordosis.

Altered function and position of the diaphragm will affect the mediastinal structures, especially the pericardium resting upon it. The pericardium in turn is continuous with the downward extensions of the prevertebral and pretracheal fascia. These latter connections become doubly involved inasmuch as the forward slope at the upper end of the kyphosis necessitates a compensatory exaggeration of the cervical curve with its convexity anterior. Hence this fascia and its specializations, including the portions to enclose the sternocleidomastoid muscle and, still more important, the carotid sheath, will experience increased tension which will in turn alter their drainage and trophicity and, in the case of the carotid sheath, potentially affect the cervical sympathetics, the vagus nerves, and the phrenic nerves.

NORMALIZING PROCEDURES

The management of the kyphotic patient depends on the stage of the disease. In the preadolescent child the main concern is with the possible prevention of permanent deformity through consideration of all phases of the patient's health, removal of any osteopathic spinal lesions which may be affecting the health in general or the segments involved in particular, proper use of exercise, and avoidance of factors productive of lumbar and dorsal changes in the normal spinal curves.

When acute deformity has occurred as a result of trauma or disease or when the condition threatens to produce cord compression, conservative orthopedic procedures such as strapping, harness, and extension bracing or, in some cases, even more radical procedures must be used. The judgment of the orthopedist and the radiologist may be of inestimable aid in the management of any case.

In the less severe types where some deformity is already present, the aim is to prevent further deformity and possibly, to some degree, to alleviate the symptoms, depending, of course, on the complexity of the structural changes which have taken place. The management may be (1) relief of irritation due to the kyphosis, to decompensation within the kyphosis, or to superimposed lesioning occurring because of the diminished "factor of safety motion" (this is particularly the place of "springing" joint mobilization, specific thrust correction, and passive movement to the joints); (2) rehabilitation of fascia and muscles through passive and active motion, exercises, deep muscle relaxation, and fascial drainage; and (3) maintenance of normal position and muscle balance.

The amount of thrust or soft tissue manipulation depends on the stage of lesion pathology and the nature, reaction, and age of the patient. Most thrust corrections or normalizations can be modified to a springing type of motion if necessary. Prone technics can be utilized if the upper chest is padded with a pillow and if the head is placed over the end or side of the table. This minimizes strain at the cervicodorsal junction and reduces the cervical curve. The patient can be propped on his elbows with his head dropped forward. From this position extension can be produced by pressure downward and caudad on the lower of two vertebrae in lesion. Rotation and side-bending can be effected by controlling the head and shoulder with one hand while the other applies pressure to the area over the transverse processes in whatever direction is indicated.

Several sitting technics are adapted to this condition, particularly that in which the patient folds his arms with the hands in the antecubital fossae and rests his forehead on his forearms. The physician places his arms under the folded arms and over the patient's shoulders, so that the fingertips contact the area of the transverse processes of the upper or mid-dorsals. As the physician leans or steps backward, the patient's back is brought into extension and specific pressures may be applied with the fingertips as indicated. Thrusts while the patient is supine with arms folded or behind his neck, and with the physician reaching his arm around the patient and using the hand or heel of the hand as a fulcrum are often impractical or impossible. If these are attempted, the fulcrum should be placed on the lower of two affected vertebrae and the force directed so as to pass above it, thus tending to produce localized extension.

Passive movement and soft tissue manipulation can be accomplished with the patient supine, physician at the side (the conventional supine hospital technic), or with the patient in the conventional prone position (modified as above). An excellent method is with the patient supine and the physician at the head of the table. The patient extends his arms above his head, either clasping his hands behind his neck or behind the physician. The physician's hands are slid down behind the patient's shoulders and spread out in the scapular and interscapular areas. Extension can be produced by raising the fingertips, while deep pressure can be similarly applied. The physician can produce longitudinal extension by gently leaning back. Mechanized traction or roller motion may have a place in producing stretching and extension, provided specific lesions are not further irritated by this motion.

Exercises particularly useful are those which can be done with the patient recumbent, rather than those which might add to concomitant lumbar strain, such as, bending and lifting. I have in mind particularly rocking on the chest with arms and legs at full length, the conscious development of the posterior spinal muscles.

Exercises are useful which stretch the intercostal pectoral muscles and develop the posterior shoulder muscles as well as the trapezius, rhomboids, serratus posterior, and deep muscles of the back. Push-ups from the floor or from an elevated position—even pushing away from a wall if moderation is required—are valuable aids. Swimming is of course one of the finest exercises since gravitational strains are at a minimum. Breast strokes and crawl strokes are indicated in kyphosis. Other exercises with bars, pulleys, weights, et cetera are excellent if the facilities are available. It is better to encourage a patient to do a simple exercise regularly than to discourage him with too extensive a program. I have already mentioned the role of posture with the admonition to remember that good posture is the aim or result of correction of altered vertebral mechanics. The patient's effort to maintain corrected posture is desirable.

It is important when evaluating the age and condition of the patient to acknowledge that there may be times when we must aid the patient to accommodate to his kyphosis. This may be true when there is a successful compensation for respiratory disturbances, for lumbar changes, or for the disk changes of senility. Needless to say, mobilization is contraindicated in the acute phases of spontaneous or induced fracture deformities et cetera. In the elderly patient with possible cardiovascular involvement, sleeping with high pillows may be a requirement. Such a patient should not use a chair which props up the middle and low dorsals but rather one which distributes the weight through the entire column.

SUMMARY AND CONCLUSION

Kyphosis has been defined as any posterior convexity of spinal curves beyond the average or normal, but this discussion has been confined principally to dorsal kyphoses. A classification has been suggested which is not exhaustive but which emphasizes the etiologic grouping as an aid in the concept of management.

The management of the types, essentially compensatory, which are most commonly seen in general practice has been emphasized particularly. Three phases of our osteopathic procedure, that is, removal of irrita-

tion, rehabilitation, and maintenance, have been discussed briefly.

Space does not permit the discussion of osteopathic endeavor into the prevention of any of the various types of kyphosis. Burns'[9] experiments suggest the role of osteopathic diagnosis and manipulative care in eugenics as well as in the possible alteration or even prevention of many of the "developmental" conditions which frequently are discovered too late. By no other means than osteopathic diagnosis and manipulative therapy can the structural integrity of the body be so well assured.

605 Mason Ave.

REFERENCES

1. New Gould medical dictionary. Blakiston Co., Philadelphia, 1949.
2. Works of Hippocrates: On the articulations. M. Classics 3:210-277, Oct. 1938.
3. Lewin, P.: Backache, and sciatic neuritis. Lea & Febiger, Philadelphia, 1943.
4. Goldthwait, J. E., *et. al.*: Essentials of body mechanics in health and disease. Ed. 5. J. B. Lippincott Co., Philadelphia, 1952.
5. Keith, A.: Man's posture; notes on its evolution, in The injured back and its treatment. Charles C Thomas, Springfield, Ill., 1940, pp. 3-16.
6. Heilig, D.: Osteopathic pediatric care in prevention of structural abnormalities. J. Am. Osteop. A. 48:478-481, May 1949.
7. Cathie, A. G.: Personal communication.
8. Kleinberg, S.: Scoliosis: pathology, etiology, and treatment. Williams & Wilkins Co., Baltimore, 1951.
9. Burns, L.: Second lumbar lesion. Research Film no. 7, American Osteopathic Association, Chicago.

Lordosis*

GEORGE J. LUIBEL, D.O.
Fort Worth, Tex.

INTRODUCTION

The area of the back which is the most frequent source of distressing complaints on the part of the patient and which bears the brunt of all force, motion, and the effects of gravity is the lumbar spine. This area between the thorax and the pelvis is a flexible unit of five or six vertebrae with their associated elastic disks. It is supported by heavy longitudinal ligaments anteriorly and posteriorly, and by powerful muscles, which are incased by the various fasciae, and which normally in the erect position of the body maintain this area of the spine in a state of lordosis.

The term "lordosis" indicates a curvature of the spinal column with a forward convexity.[1] This type of curvature is normal in the cervical and lumbar areas, but this discussion will be limited to problems which are connected with exaggeration of the normal anterior lumbar curve and the resultant state of abnormal body mechanics. Further, only problems which are within the scope of management of the osteopathic physician in general practice will be considered. Some of these conditions, either because of their congenital origin or because irreversible tissue changes have developed, are not amenable to any type of treatment. Others will require highly specialized forms of treatment and cannot be included in office management.

ETIOLOGY

Where excessive lordosis has become a clinical problem the most common etiologic factors are postural conditions produced by flexion contractions of the hip; forward displacement of one vertebral body on another (spondylolisthesis); muscular dystrophy; excessive abdominal weight; and abdominal enlargement as in pregnancy, poliomyelitis, achondroplasia, and compensation for kyphosis above or below.[2]

In taking up the etiologic background of abnormal lordosis problems some of the irreversible factors are readily apparent. Most cases of purely congenital origin must be referred for reconstructive surgery, and some of these cannot be helped by any known methods of treatment. The flexion contractions of the hip that are produced by tuberculosis, congenital dislocations, and arthritis obviously must be handled in such a manner that the primary disease is the chief objective of the treatment. Other syndromes that involve abdominal enlargement, spondylolisthesis, and the muscular disabilities following poliomyelitis or other diseases are usually within the province of the general practitioner if proper management is understood.

This understanding, however, is not particularly easy to grasp. A review of the literature will reveal that not a great deal has been written on the subject of lordosis per se, and even those authors who refer to lordosis do not give much time to the subject as a clinical entity. It is passed over lightly as being connected with or the result of certain diseases already mentioned. The purely functional lordosis that concerns the average physician and his patients is not dealt with in a very specific way in current medical literature. When I refer to functional lordosis, I mean the type seen in the ambulant patient who comes into the doctor's office in a fair state of health and is not incapable of performing the greater portion of his daily duties. Nevertheless, he is the patient who is uncomfortable and complains of pain, but is not being helped adequately by the therapy he is offered. He is at times truly a problem patient and one whose complaints are exasperating to both himself and his physician.

The dilemma of this patient is sometimes baffling when proper treatment must be considered. Generally speaking this is because his postural and structural problems are not recognized, which is somewhat surprising in view of the fact that the literature concerning posture indicates that a great deal of thinking is being done on this phase of medicine.

SYMPTOMS

Some of the more common symptoms attributed to the faulty body mechanics seen in exaggerated lordosis are albuminuria (the orthostatic type usually seen in children or young adults), backache, stiffness and soreness of the legs, dysmenorrhea, bearing down sensations, edema, constipation, fatigue, and dystrophy of various degrees.[3]

*Presented as a part of the Symposium: Dynamics of Posture, at the Fifty-Eighth Annual Convention of the American Osteopathic Association Toronto, Canada, July 13, 1954.

Lordosis has also been held responsible for such chronic conditions as visceroptosis, enteroptosis, prolapse of the uterus and ovaries, faulty gait, joint strain, impaired circulation, and varicose veins. However, whether some of these maladies are secondary to lordosis or are instrumental in bringing about the syndrome sometimes presents perplexing diagnostic puzzles.

PATHOGENESIS

Let us consider some of the more common factors that produce functional lordosis. The flexion contractions of the hip due to tuberculosis, congenital dislocation, and arthritis are obviously secondary to these conditions. Anything that will minimize or reverse the bone pathology will enable treatment to be directed to the supporting musculature. Many of these patients can never be restored to a normal posture because of destruction of the bone substance.

Various muscular destructions, such as those brought on by poliomyelitis, are amenable to treatment to the extent that tissue function can be restored. Sometimes the excessive nerve destruction that these patients have suffered makes any type of therapy an inevitable failure. Those conditions involving excessive abdominal weight and abdominal enlargements either from pregnancy or abdominal tumors are ordinarily reversible, and it is in these circumstances and in functional problems that have resulted from poor posture that the physician can offer a favorable prognosis in the management of excessive lordosis.

Therefore, this discussion of excessive lordosis will be largely a discussion of faulty posture as it applies to the lumbar area of the spinal column, the abdominal viscera which are attached to it, and the muscles, ligaments, and nerves which support and activate the spine.

Poor posture has been fairly widely discussed in medical literature and is most frequently observed in the slender type of individual. Goldthwait and his associates[4] have attributed this to the pull of the Y-ligaments and the anterior thigh muscles, holding the pubes down, while the weight of the body and trunk which are posterior to the pelvis tends to pull the sacrum upward. Consequently, in this type of individual the plane of the top of the sacrum is considerably above that of the symphysis pubis. In the stocky individual this problem is rarely seen because the pubes are practically on the same plane as the top of the sacrum, since that sort of strain which occurs in the slender type was not present during the growing period. However, obese, short-waisted patients will sometimes present extreme lordosis.

It would be well also to consider the other differences in the bony anatomy of the pelvis and lower back that Goldthwait and his associates[4] point out. For instance, the top of the sacrum varies in relation to the crest of the ilium. Sometimes the base of the sacrum will be on a level with the crest of the ilium and at other times it will be the width of a vertebra lower. Now, as would be expected, the high position of the sacrum occurs more commonly in the slender individual, probably because of the instability of the joints as compared with the low-placed sacrum found more commonly in the stocky type.

Nelson[5] has demonstrated the effects of gravity on structure. The slender body type with the proportionately long spine may be quite susceptible to this force. The load induced both by the superior body structures and by gravity will cause stress in the thoracic area and resultant instability. This stress causes the column to bow and remain kyphotic. Then the lumbar area moves into lordosis in an effort to compensate and maintain equilibrium.

Cathie[6] has stated, "The posture of an adult is the result of a pattern acquired during earlier years, influenced by the state of nutrition, his ability to withstand the strain and stresses of physiological trauma, and his occupation." This same author points out that the lumbar curve begins to develop when the child starts walking, and strain is placed on this pivotal point when vertebral development may not be complete. In fact the anterior part of the vertebrae may tend to bend down under the load, thus altering the normal mechanical state of these joints.

The lumbar curve in the adult extends from the twelfth dorsal segment to the lumbosacral articulation, and these two extremes are sometimes considered as part of the normal curve. In the physiologic anterior spinal curve the vertebral bodies and the disks should receive most of the weight of the column. In this position the force of gravity through the spine is accepted without undue strain on the spinal muscles and ligaments. The articular facets, it must be remembered, function as stabilizers and assist in limiting the range of motion of the joints.

In the lumbar area the facets are not designed to carry body weight, but definitely influence the types and amount of motion in the spine. Now when the lumbar spine has assumed an excessively lordotic position, the whole body weight tends to be thrown backwards on the articular facets and on the joint capsule instead of being borne by the body of the vertebrae. There are various symptomatic reactions that can be observed under these circumstances since the facets are now liable to inflammation with not only local signs of reaction in the ligaments and joint surfaces, but possibly also actual narrowing of the intervertebral foramina and painful symptoms along the course of nerves and arteries that supply areas removed from the site of the actual trouble. If the strain is severe enough the spinous processes may also actually be impinged upon and may be reduced to accepting some of the weight-bearing duties of the more anterior portion of the vertebrae, with additional stretching and straining of the ligaments in the joint areas.

Naturally, in viewing body mechanics arbitrary standards must be adopted as normals in order that deviations from these norms may be properly interpreted. As would be expected the lordotic syndrome is best evaluated by viewing the patient laterally. In this respect, according to Kerr and Lagen,[7]

> . . . the line of gravity arises . . . from the supporting surface of the feet between ball and heel, passes through the ankle- and knee-joints, runs between the hip-joint and sacrum and through the upper ventral portion of the sacro-iliac junction; then runs upward behind the bodies of the lumbar spine, intersects the spine at the lumbothoracic junction, runs slightly in front of the thoracic spine, intersects the spine again at the cervicothoracic junction, runs slightly behind the cervical vertebrae, and touches the head behind the ear at the mastoid process.

The most accurate determination of the true state of the lumbar curvature is made by x-ray study of the patient. Ferguson[8] has described the normal angle between a horizontal plane and the superior margin of the sacrum as 34 degrees. The same authority has pointed out that if a vertical line through the center of the body of the third vertebra passes more than ½ inch anterior to the sacrum there is instability because the ligaments are carrying more than their share of the shearing stress.

However, Magoun[9] in his series of patients has demonstrated that x-rays per se do not constitute an accurate diagnostic measurement of a patient's clinical difficulties. His series showed a wide variation in the degree of abnormal pelvic tilt, which did not necessarily coincide with the symptoms. Magoun has shown that some of the most extreme angulation was borne comfortably by many individuals while slight deviations from the arbitrary normal was most uncomfortable in many instances. Naturally, the individual who has developed a shift in gravity with an anterior curvature of the spinal column is forced to adopt certain measures in order to compensate for this abnormal state of body mechanics.

I feel that it is preferable where possible to have x-rays made in the standing position. This gives a more accurate picture of the true lumbosacral angle under the stress of gravity and weight bearing. X-ray findings are, however, only one of the many diagnostic criteria in lordosis and must be evaluated in the light of all extraneous factors traumatizing the spine.

Spondylolisthesis, which is a true forward slipping of one vertebra upon another, ordinarily occurs at the lumbosacral junction, but it may involve one of the higher lumbar vertebrae. There is a characteristic appearance in the hollowness that develops in the lower back as the spine moves anteriorly. Most of these patients come to the attention of the physician following some traumatic incident which stretches the nerves and muscles and strains the ligaments, causing either localized or referred pain.

Spondylolisthesis is usually considered a congenital defect, with the symptomatology developing later in life following such a strenuous experience as diving or other intense gymnastics which cause considerable trauma to the lumbar area. It is interesting to note that a few experiments have been made which indicate that possibly this particular phenomenon is not an embryologic development. Hitchcock,[10] after an examination of fetal spines, felt that fracture of the neural arches produced by forced flexion, perhaps combined with sidebending or torsion in infancy or even during birth, produces a fibrinous or cartilaginous union, which would explain this condition in the apparent absence of a traumatic history in later stages of the patient's life.

Somerville[11] has advanced the hypothesis that all the various spinal curvatures begin as pure lordosis. As the element of rotation is introduced plus the restriction of the rib cage, the abnormality may finally end up as the curvature that we have come to call scoliosis. Experimental studies in rabbits, based on the cauterization of the neural arches, result in excessive lordosis approaching spondylolisthesis. Apparently nature permits the continued growth of the anterior portion of the vertebrae after injury or disease has retarded normal development of the neural arches.

Somerville[11] points out that the curvatures found in anterior poliomyelitis are explainable if one considers the interference with the growth of bone closely associated with the paralyzed muscles. Since the sacrospinalis muscles have important attachments at the neural arches the interference is traceable through this pathway, and a rotational lordosis would result. It is possible that these writers have developed a line of thinking that may explain this phenomenon more clearly and will improve the treatment in the future.

The writings of Cathie reveal a closer study of the anatomic changes that have taken place where poor body mechanics prevail and a keener realization of the functional and degenerative disturbances to which the various organs and tissues have been subjected than is to be found elsewhere. I would therefore like to quote directly from Cathie's work which so accurately summarizes these pathologic changes:

> The various abnormal curves often seen are but gross evidence of what is taking place and should not be permitted to overshadow the minor ones capable of producing more obscure symptoms. Poor posture may not produce immediate pathological symptoms, but must be considered as a potential cause of trouble later. The necessity for surgical treatment of many visceral pathologies may be removed if the postural defects responsible for the altered visceral function are removed.
>
> Limitation of muscular activity and restriction in the range of joint motion is accompanied by a decrease in the flow of blood and lymph. . . . In postural changes when muscular activity is limited, congestion of the tissues to some degree will be present. . . . With the abnormality of the spinal curve in the lumbar region there results a relaxation of the mesenteric and mesocolic attachments. This is followed by mesenteric and mesocolic drag as the attached viscera assume a low-lying position. Retardation in the circulation follows with chronic passive congestion, accompanied by changes in the vasomotor and visceromotor activity. The decrease in the diameter of the thoracic cavity that results from the sag of the ribs brings the origin of the diaphragm nearer to its insertion permitting it to relax. Respiratory activity is then decreased with changes in the thoracic and abdominal cavities. The structures above the diaphragm show the effects produced by the lowering of the diaphragm. Tension on the pericardium, heart, and associated vessels and nerve plexuses complicates the picture and may give rise to symptoms referable to the lungs, heart, or vascular structures of the neck. Pressure of the abdominal viscera upon one another and upon the anterior wall of the abdomen follows because of the lowering of the diaphragm. Pressure is directed on downward to the pelvic viscera which, because of the altered sacral position, have lost much of the protection normally offered by the sacrum. . . . The large veins of the abdomen pass through and are attached to the diaphragm, the motion of which is of the greatest importance in moving blood within those veins. Restriction of diaphragmatic action is then capable of increasing the chronic passive congestion of all of the venous channels below this level.[12]

Examination of the patient affected with excessive lordosis will reveal tension and rigidity of the lumbar muscles in an attempt to carry the weight caused by the anterior shift in the patient's balance. There is thickening of the spinal ligaments, and the lumbar vertebrae are usually maintained in flexion. If the condition is extreme enough the vertebral spines may actually be impinged upon one another and the lower ribs may even ride on the crest of the ilium. The posterior portion of the pelvis will be elevated, accompanied by stretching and tension of the hamstring muscles. Fibrosis develops in the gluteal muscles with irritation of the bursa at the lower border of the gluteus maximus. This area may become the site of pain which is localized on the level of the average hip pocket. For this reason Rothmeyer[13] refers to it as "hip-pocket pain." The iliotibial band becomes contracted and tender as does the sartorius muscle, which tends to maintain the already forward tilt of the pelvis.

A shearing force takes place at the lumbosacral angle as the center of gravity shifts forward. Strain of the iliolumbar ligament results, and usually lumbosacral lesions are present. The foramina between the fourth and fifth lumbar and between the fifth lumbar and sacrum are the smallest intervertebral foramina and yet through them emerge the largest spinal nerves. Thus, it can be seen that when the spine moves forward on the relatively fixed sacrum these nerves are subject

to irritation from increased soft tissue tension and probably at times actually bony compression.[14]

THERAPY

There are two main objectives in the treatment and management of excessive lordosis. We are concerned with improving the postural and lesion pattern of the patient in order to mitigate the pain and distress in the back and legs or to relieve the evidence of visceral malfunction and distress. Ordinarily either the visceral or the somatic symptoms predominate and are foremost in the patient's mind, but it is possible for both to be present simultaneously; in any event the physician must be aware of either possibility although the pathologic signs may be dormant.

Clybourne[15] has pointed out that practically all of the abdominal contents are attached to the back to some extent. Therefore, if the spine is thrust forward abnormally the viscera also move forward and downward. This ptosis is possible because the increased angulation of the sacrum does not provide the normal pelvic shelf which ordinarily supports the organs and because of the faulty position of the diaphragm and the lax abdominal muscles.

The neuro-circulatory changes that may affect the contents of the chest and abdomen during poor posture have been described, and the possible pathologic consequences are obvious. However, the dramatic therapeutic progress that could be obtained from a reversal of poor body mechanics usually goes unrecognized. Improvement of the function of such organs as the heart, liver, and the colon is certainly more important in the over-all health of the patient than controlling the aches and pains in his back and limbs. These latter symptoms, while they may be distressing, are the warning signals from nature to correct an untenable situation while it may still be reversible. Actually it is usually possible to lift pelvic viscera to a greater degree by improved posture than it is by surgical suspension. Judovich and Bates[16] have demonstrated by x-ray technics that a "fallen" stomach can rise in the abdomen by as much as 6 inches. In addition to the improved position of the various organs in the chest and abdomen, the over-all height of the individual is increased by straightening the lumbar curve and repositioning the vertebrae and the intervertebral disks.

Treatment of increased lumbar lordosis involves a problem of general management of the patient and an attempt to correct the over-all picture of bad body mechanics and poor postural habits. In addition to this, it is imperative that the patient not continue an occupation that is aggravating his physical condition, if change is at all possible. It is readily apparent that it is not worth while to treat the patient once or twice weekly for short periods if he is constantly aggravating his disability by his daily routine.

The physician's first concern for the patients in his office should be to achieve a balancing of the pelvis on a horizontal plane. By that, I mean that the horizontal level of the sacrum must be made correct by normalizing short-leg and sacroiliac conditions. Then measures must be taken to correct by proper manipulative therapy the lumbodorsal lesions and sidebending which may be present in the remainder of the lumbar area. Fryette[17] has pointed out that many times lumbothoracic lesions must be corrected before any change can be maintained in the lower lumbar vertebrae. Most discomfort is probably experienced at the lumbothoracic junction and at the fifth lumbar vertebra than at any other sites in exaggerated lordosis. In these cases, if the fifth lumbar tends to ride abnormally forward on the sacrum even though true spondylolisthesis is not present, I have found that the strap treatment originated by Kettler[18] is the most effective therapy. This technic involves firm anchoring of the sacrum while the patient slowly stands erect using his own muscular forces to pull the lumbar vertebrae back over the sacrum.

The strap technic of Kettler may also be used in mild cases of spondylolisthesis along with soft tissue relaxation and a back support during the acute stages. Unless the trauma has been unduly severe most patients will respond favorably to this conservative therapy, but some will ultimately require surgical fixation of the damaged spine.

In addition to the manipulative therapy directed to the somatic element in the lordosis syndrome, there are certain technics that can be applied to the various supporting structures of the viscera. I particularly recommend the various fascial lifts to the pelvic, diaphragmatic, and even cervical fascias, that have been developed by Sutherland[19] and his associates.

The patient must be educated to a normal state of body mechanics, so that he understands what he is trying to achieve in the way of a proper anteroposterior curve of the lumbar region. He must be shown constructive exercises and be taught proper postural habits. The most common admonition, "Pull in the abdomen and flatten out the back," is good advice. Many authorities suggest that the patient flatten his back against the wall and then walk away from the wall as straight as possible, repeating this procedure several times a day.

Before proceeding too far with therapy, inspection of the patient's footwear is essential to make sure that it is not inadvertently undermining the program.

Ellis[20] has suggested that the height of all heels for lordotic women should be limited to an inch and a half at the extreme. However, in my own experience, I find that, unfortunately, too many patients are more interested in the cosmetic effect of the footwear than they are in physiologic results. The problem revolves itself into one of selling the patient on the idea of wearing shoes that aid in the normal body function and explaining the situation so that they understand what is to be accomplished and the reasons for it. They must be made to realize that these changes are suggested for their benefit and not to satisfy certain whims and fancies of the physician.

If necessary, a "breast wedging" which is ⅛ inch thick at the front of the heel and tapers down to nothing halfway back can be added. Where there is a tendency to inversion and eversion of the ankle, the heel may be raised only at the appropriate front corner and the wedge sloped from there. I usually attempt to have women suffering from lordosis wear a Girl Scout type of shoe if they have to be on their feet or when they are doing very much walking, while I try to make them understand that they must restrict their use of higher heels to short periods and when they will not be standing for any great length of time. In this way, the beneficial effects of gravity are used to help the patient to achieve a more normal stature.

Starks[21] reports a "sway-back" lumbar spine shifting a whole inch backward on the x-ray plate when only ⅛ inch was added to raise the front of the heel to counteract a lumbar lordosis. The leverage is quite long and so magnifies the result. Such drastic structural changes must be accomplished slowly and in most

cases considerable persistent relaxing treatment must accompany the transposition. Stretching the ligaments and fasciae aids in maintaining corrections, particularly where rotation has entered the picture. It is likely that in most cases where the use of lifts has not been successful adequate study was not made at the start or too precipitous a transition was attempted.

A variety of exercises has been suggested to rehabilitate patients with aggravated lordosis. It is interesting to note the confusion and lack of understanding on the part of both doctors and patients about the methods to be used in re-educating muscular balance and control. Obviously the problem is not to increase the size of the patient's muscles but rather to see that the muscles that are available are put to their proper use.

Kendall and Kendall[22] have pointed out that the fundamental principle of adapting the exercise to the individual's needs is much abused, citing the double leg raising exercise as a case in point. They have shown that anyone who has lordosis or an anterior pelvic tilt usually has weak abdominal muscles and overdeveloped hip flexors. The more severe the lordosis, the greater is the imbalance. As double leg raising will increase the muscle imbalance and the degree of lordosis, this exercise is contraindicated.

In correcting lumbar lordosis the basic problem in exercises is to relax the lumbar musculature, thereby stretching it, and to cause strengthening and increased contraction of the abdominal muscles. At the same time exercise must be of a type that the individual will be encouraged to follow and that will not cause too much fatigue, backache, or aggravation of the symptoms. That this problem is also appreciated by the laity is highlighted by an article in the November, 1953, *Reader's Digest*[23] entitled "I Had My Wife Made Over."

According to Eggleston[24] two basic rules should govern all exercises. One, they should never be done to the point of fatigue; two, any exercise that causes pain should be discontinued until the physician can find the reason.

A review of the various helpful exercises suggested by different authors will reveal that all are basically concerned with decreasing the pelvic tilt, strengthening the abdominal muscles, and overcoming the contraction of the pelvic flexors. While there may be minor differences in the approach to the problem, the underlying principles are essentially the same.

Eggleston[24] instructs the patient to lie supine, relaxed, and straight on a firm surface, elevate the chest, and gently spread the thoracic cage by grasping the costal arch and pulling gently outward during inspiration and maintaining the pull during expiration. Then the patient should flex the knees, draw them with his hands down to the chest, and then lower the feet to the floor. With the knees flexed, the lumbar spine is flattened, and the sagging abdomen is pulled in. The patient now extends the legs, still maintaining the chest elevation, and forces the heels down, dorsi flexing the feet. The resultant contraction of the leg muscles elevates the pubes in relation to the sacral base.

The small book, "Care of the Back," by Ishmael and Shorbe,[25] contains many useful exercises and has the added advantage of graphically portraying by photographs and illustrations many of the problems that the patient encounters in daily life. These authors point out that improper sleeping habits aggravate lordosis.

I find useful an exercise outlined by Schatz[26] as early as 1912. This maneuver is particularly appealing since it accomplishes all the objectives at once. The patient is instructed to lie on the floor and flex the legs and thighs on the abdomen. Then with the legs and the thighs remaining flexed, he attempts, by abdominal contractions, to pull the knees down toward the axillae. This is done repeatedly until the muscles are tired; a short period of rest follows and then the exercise is continued. Flexion of the legs and thighs is maintained during the rest period.

The success of any group of exercises that the physician selects depends upon the faithfulness and persistence with which they are pursued by the patient. In the final analysis it is the patient himself who must re-establish normal balance between the various antagonistic muscles which give the body its proper support.

CONCLUSION

My conclusions concerning the patient with a lordosis problem are based on an appraisal of the normal structural relationship for that individual and an evaluation of his somatic and visceral complaints. Review of the literature dealing with postural problems and clinical observations of patients emphasizes the basic osteopathic concept that normal physiologic function will gradually decline under the handicap imposed by perverted structure.

3037 James Ave.

REFERENCES

1. American Illustrated Medical Dictionary. Ed. 22. W. B. Saunders Co., Philadelphia, 1951.
2. Cabot, R. C., and Adams, F. D.: Physical diagnosis. Williams & Wilkins Co., Baltimore, 1942.
3. Davis, C. H.: Gynecology and obstetrics. W. F. Prior Co., Hagerstown, Md., 1933, vol. 3.
4. Goldthwait, J. E., *et al.*: Ed. 5. Body mechanics in health and disease. J. B. Lippincott Co., Philadelphia, 1952.
5. Nelson, C. R.: Postural analysis and its relation to systemic disease. J. Am. Osteop. A. 47:555-558, July 1948.
6. Cathie, A. G.: Influence of lower extremities upon structural integrity of body. J. Am. Osteop. A. 49:443-446, May 1950.
7. Kerr, W. J., and Lagen, J. B.: Cited by Coulter, J. S.: Physical therapy, in Cyclopedia of medicine. F. A. Davis Co., Philadelphia, Service volume, 1938, pp. 1110-1111.
8. Ferguson, A. B.: Cited by Archer, V. W.: The osseous system. Year Book Publishers, Chicago, 1945.
9. Magoun, H. I.: Abnormalities in sacral base plane as underlying factor in osteopathic pathology of spine. Academy of Applied Osteopathy Year Book. Edwards Brothers, Ann Arbor, Mich., 1946, pp. 1-14.
10. Hitchcock, H. H.: Cited by J. T. Nicholson: Spondylolisthesis, in Cyclopedia of Medicine, F. A. Davis Co., Philadelphia, Service Volume, 1941, pp. 826-827.
11. Sommerville, E. W.: Rotational lordosis: development of single curve. J. Bone & Joint Surg. 34-B:421-427, Aug. 1952.
12. Cathie, A. G.: Soft tissue changes that may follow postural defects. J. Am. Osteop. A. 48:235-238, Jan. 1949.
13. Rothmeyer, G. S.: Personal communication.
14. Rice, R. W.: Orthograde posture and low-back lesions. J. Am. Osteop. A. 42:435-436, June 1943.
15. Clybourne, H. E.: Low-back problem. J. Am. Osteop. A. 46: 295-303, Jan. 1947.
16. Judovich, B., and Bates, W.: Pain syndromes. Ed. 3. F. A. Davis Co., Philadelphia, 1949, p. 28.
17. Fryette, H. H.: Academy of Applied Osteopathy Graduate Instruction Course, Kansas City, Mo., Oct. 1952.
18. Kettler, C.: Personal communication.
19. Lippincott, H. A.: Osteopathic technique of Wm. G. Sutherland, D.O., Academy of Applied Osteopathy Year Book. Edwards Brothers, Ann Arbor, Mich., 1949, pp. 1-24.
20. Ellis, W. A.: Personal communication.
21. Starks, C. R.: Cited by Magoun, H. I.: Mechanics of chronic spinal lesion. J. Am. Osteop. A. 42:489-500, July 1943.
22. Kendall, H. O., and Kendall, F. P.: Muscles; testing and function. Williams & Wilkins Co., Baltimore, 1949.
23. Packard, V.: I had my wife made over. Readers Digest 63:105-108, Nov. 1953.
24. Eggleston, A. A.: Cited by Pratt, W. A.: Diagnosis and treatment of postural abnormalities. Academy of Applied Osteopathy Year Book. Edwards Brothers, Ann Arbor, Mich., 1952, pp. 36-41.
25. Ishmael, W. K., and Shorbe, H. B.: Care of the back. J. B. Lippincott Co., Philadelphia, 1953.
26. Schatz, W. J.: Physical exercise for correction of lumbar lordosis. New York Med. J. 95:862-864, 1912.

Journal A.O.A.
November, 1954

Fetal Cranial Stresses During Pregnancy and Parturition

Forceps Application and Cranial Distortion*

DONALD E. PINDER, D.O., Med.Sc.M.
Associate Professor of Anatomy and Neurology
College of Osteopathic Physicians and Surgeons
Los Angeles
and
JULIAN LANSING MINES, D.O., F.A.C.O.O.G.
Associate Clinical Professor of Obstetrics
College of Osteopathic Physicians and Surgeons
Los Angeles

INTRODUCTION

This is the first in a series of articles dealing with the potential effect upon the fetus of cranial stresses exerted during pregnancy and parturition. The conclusions reached, as set down in this paper, are the results of experiments dealing exclusively with compression exerted upon the fetal cranium by the application of obstetric forceps.

PURPOSE

It is the purpose of this series to shed some light upon the effects of known forces that produce fetal cranial stress during childbirth. As the use of the obstetric forceps is becoming common practice today and their application may be one of the factors augmenting fetal distress, possible effects upon the child through their use and abuse should be thoroughly understood.

MATERIAL AND METHODS

The specimens used in this study were prepared in the following manner: Formalin-preserved fetuses were used. The scalp was removed on a horizontal line level with the top of the ear. The frontal bones were detached by cutting along the coronal suture and lateral to the metopic suture, in order to avoid the superior longitudinal sinus, and fractured off at the base of the anterior fossa. The cerebral hemispheres, brain stem, and cerebellum were removed carefully to avoid disturbing the falx cerebri and the tentorium cerebelli.

Manual force was exerted in three different planes in an attempt to duplicate the compression resulting from three types of forceps application. Because of the dissection it was possible to observe and photograph the stretching and shearing strain of the falx cerebri and tentorium cerebelli, as well as to visualize other distortions within the cranial vault as a consequence of the administration of these forces.

OBSERVATION

Anatomy.—

Injuries to the fetal head resulting from excessive or improperly applied forces may be understood best by referring to certain features of the cranial bones, the dura mater, and the veins of the brain. The cranium consists of a vault and a base; the bones of the vault are flat, elastic, and movable, while those of the base, by comparison, are irregular, relatively rigid, and fixed. Certain thickenings and ridges of bone are present which buttress the skull by dispersing to other areas locally applied forces. Of particular interest to this discussion is what may be called loosely a "ring" of bone near the junction of the vault and base. The ring is made up of the supraorbital ridges, the zygomatic arches, the temporal ridges, the mastoid and petrous portions of the temporal bones, and nuchal lines of the occipital bone. A midline buttress extends through the base from the crista galli to the external occipital protuberance. The role of the ring in forceps positioning will be discussed later.

The outermost layer of the meningeal coverings, the dura mater, is a tough, relatively inelastic, fibrous membrane consisting of two laminae. At certain points the internal lamina is reflected inward between portions of the brain to become supports and partitions which limit the movements of the brain. One of these, the falx cerebri, dips downward from the midline of the vault into the longitudinal cerebral fissure between the cerebral hemispheres. The tentorium cerebelli projects inward to support the occipital lobes above and to roof over the cerebellum and posterior cranial fossa below. It is attached posteriorly to the inner surface of the occipital bone on a horizontal line which corresponds with the transverse sinus. Anterolaterally its attachment is to the superior border of the petrous portion of the temporal bone. The free anterior margin is sharply concave and forms the tentorial notch which embraces the brain stem. The falx cerebri is attached to the inner surface of the skull, along the line of the superior longitudinal sinus. Anteriorly it is attached to the crista galli and passes posteriorly with a curved free margin to become fixed to the tentorium cerebelli, which slopes upward to establish this point of attachment. The outer layer of the dura is in reality the periosteum of the skull and, in the fetus, is intimately adherent to the bone. In the fetus, ossification of the skull is incomplete, the suture lines are separated and a considerable range of movement is permitted between the bones, especially those of the vault. It should be noted from the foregoing that movement of the cranial bones must, of necessity, be transmitted to the dura and its reflections, as a force producing stresses in the falx and tentorium, and, if sufficiently great, movements of these structures results.

The venous drainage of the brain is unusual in that the vessels terminate by emptying into one of the large sinuses contained between the layers of the dura. Generally speaking, veins from the superior surfaces of the cerebral hemispheres pass upward, traverse the subarchnoid space for some distance, and empty into the superior longitudinal sinus where the dura is reflected as the falx. Veins from the medial surfaces of the hemispheres terminate in the inferior longitudinal sinus contained in the free margin of the falx. Veins of the inferior surfaces of the hemispheres empty into the sinuses on the base of the skull; those of the more posterior

*Presented at the annual meeting of the American College of Neuropsychiatrists, Atlantic City, N.J., July 11, 1952.

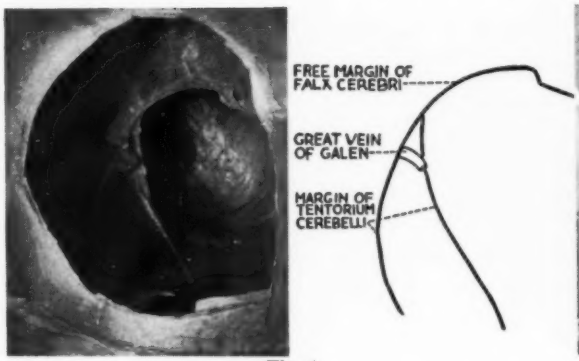


Fig. 1

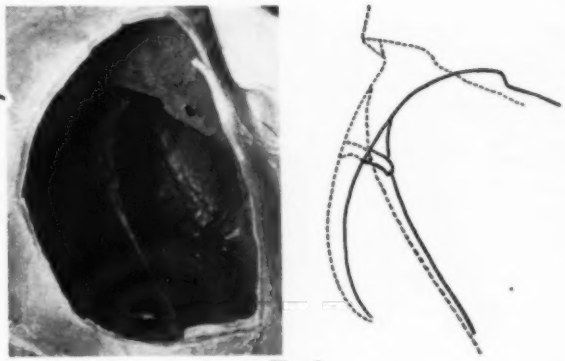


Fig. 2

Fig. 1.* Alignment of the free margins of the falx cerebri, of the tentorium cerebelli, and of the vein of Galen before the application of any forces. Fig. 2.* The application of force simulating that exerted by forceps applied in the generally accepted manner results in a displacement of the falx and tentorium posteriorly and upward (as shown by dotted lines). Note also the displacement of the vein of Galen and plication of the falx.

portions terminate in the transverse and superior petrosal sinuses in the attached portion of the tentorium. Superior cerebellar veins and some of the veins draining the brain stem ascend to empty into the transverse sinus. The majority of veins described terminate at rather an acute angle at their junction with the sinuses. The deep substance of the hemispheres and a certain portion of the brain stem are drained by veins which unite ultimately to form the great cerebral vein of Galen. This vein traverses the subarachnoid space to unite at the anterior junction of the falx and tentorium with the inferior longitudinal sinus to form the straight sinus. The straight sinus occupies the line of junction of the falx and tentorium and receives some of the cerebellar veins.

Anatomic Changes Occurring with the Application of the Forces Employed.—

Figure 1 illustrates the normal alignment of the intracranial structures under study. Figure 2 demonstrates the compression noted with the application of force simulating that exerted by forceps employed in the generally accepted manner. Figure 3 shows the effect of pressure applied according to the principle proposed later in this article. Figure 4 portrays the effects which might result from an oblique application when the plane of the forceps and the law of the forceps have been ignored.

Examination of photographs of the effects of the above forces taken without disturbing the relationship between the fetal head and camera indicates that all of the forces employed effected some movement of the dural reflections. In general, the falx was elevated, thus pulling the tentorium upward and backward. The great cerebral vein, being attached to the juncture of falx and tentorium, is obliged to move with these structures. A force obliquely applied across the calvaria from the left frontoparietal area to the right parieto-occipital area effects the greatest distortion of the dural reflections, producing not only great movement of these structures but marked twisting of the falx cerebri. With a force applied as in conventional forceps application, that is, through the parietal eminences, buckling of the falx occurs. If the compressive force is applied according to the new principle proposed later in this article, the bulk of the distorting forces is absorbed by the base of the skull and the bony ring, effecting minimal displacement and distortion.

It is appreciated that removal of the frontal bones may be construed as reducing some of the support which the cranial vault normally enjoys. However, it was observed during the experiments that the forces applied were transmitted virtually independently of these bones. Undoubtedly appli-

*In Figures 1-4 the photographs show the cranium and dural reflections as seen from the front and right side of the fetus, and the line drawings delineate the positions of the vein of Galen and of the free margins of the falx cerebri and the tentorium cerebelli as seen in the photographs.

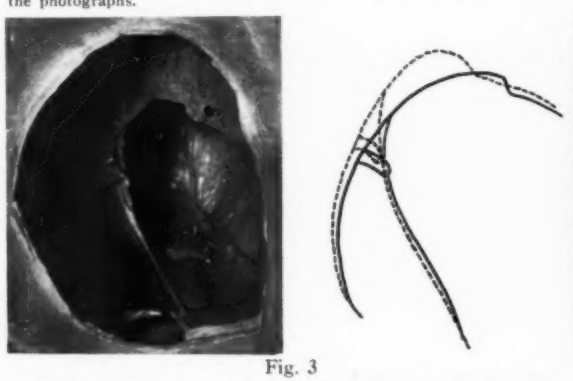


Fig. 3

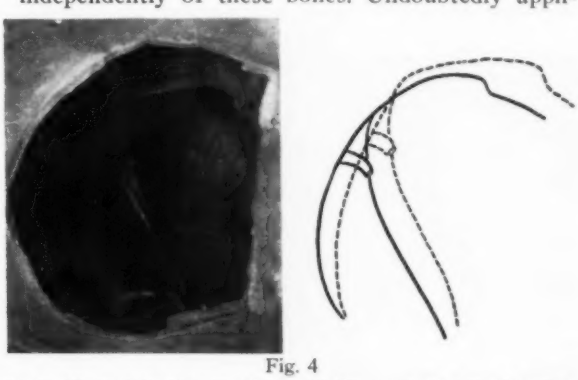


Fig. 4

Fig. 3.* Pressure applied according to the principle proposed in this article also results in displacement of the falx and tentorium (as shown by dotted lines) but not to the degree nor with as much distortion as that shown in Fig. 2. Fig. 4.* Oblique application of forceps results in the greatest distortion of the dural reflections. Not only does upward and posterior displacement occur, but lateral distortion as well. (Displacements and distortion indicated by dotted lines.)

cation of these forces in the sagittal plane would affect the frontal area directly, but this problem was not under consideration.

DISCUSSION

Factors Influencing Fetal Distress.—

The full-term human fetus normally exists in utero in a state of cyanosis with a blood oxygen unsaturation twice the degree necessary to cause visible cyanosis.[1] Owing to the impairment of placental circulation during uterine contractions, the arterial blood of the fetus contains less oxygen than the venous blood of the mother. Any factor which exaggerates this suboxygenation places the fetal cerebral circulation in added jeopardy. Misapplied forces may have this effect.

Forces or movements transmitted to the dura by changes in the contour and positions of the cranial bones will in turn be transmitted to the sinuses and the thin walled veins which empty into them. Holland,[2] and later Arbuckle,[3] elucidated the arrangements of the fibers in the dural reflections. The agglomeration of these fibers into the so-called stress bands achieves an arrangement designed to strengthen the dural reflections in those directions which are subjected to the greatest strain in cranial molding. Thus, forces and distortions transmitted to the falx and tentorium will be resisted by the stress bands but, if their elasticity is overcome, certain untoward events may result. Distortion of the dural reflections may cause angulation or traction of the veins as they terminate in the sinuses. Angulation of the vein may be sufficient to impair venous drainage of a portion of the brain. As a consequence of vascular congestion in the brain of the fetus and the newborn, increased cerebral venous pressure causes a rise in intracranial pressure which in itself further elevates venous pressure so that a vicious cycle is established. Varying degrees of cortical and subcortical cellular destruction are possible, and cortical and subcortical thrombosis, petechial and coalescing hemorrhage with rupture of the external and larger cerebral veins may result. Porencephaly, hydrocephalus ex vacuo, epilepsy, idiocy, degrees of spastic paraplegia, or Little's disease may be further complications.

Holland[2] made an extensive study of the effect of severe trauma upon the fetal skull. Excessive forces may actually tear the dural reflections and their contained sinuses, a situation which, fortunately, seldom happens. Our study emphasizes the potential for less dramatic but nonetheless disabling intracranial damage. When it is realized that the use of forceps may be the activating cause for the conditions mentioned above, the importance of utilizing forceps in intelligent fashion becomes more apparent.

Forceps Application and Their Traumatic Effects.—

Function of the forceps:

During normal parturition, the fetus is in the attitude of universal flexion, this flexion being exaggerated with each contraction of the uterine fundus. With vertex presentation the most dependent part (occiput) is brought in contact with the pelvic floor. According to "the law of the pelvic floor," this most dependent part is anteriorly rotated as a result of the continued expulsive forces exerted from above. The occiput thus by internal rotation is brought beneath the arch of the pubes, and with the aid of the guiding resistance of the pelvic floor is delivered by extension. It is this portion of the labor mechanism that forceps were designed to aid. Intercession along the path of delivery with the forceps is permissible, if from that point on the normal mechanism is mimicked.

Traction is the primary function of obstetric forceps. The degree of cranial compression exerted is proportionate to the amount of traction employed, and, although compression is an intrinsic function impossible to avoid, it must be minimal. More fetal embarrassment results from the excessive compression of the vertex than from any other effect produced by the use of forceps. Traction should be applied gently with the operator seated, and periods of relaxation should be interposed. The traction exerted should never be greater than that which can be accomplished by flexion of the operator's forearm. No foot bracing should be subscribed to, and the force exerted should not be great enough to drag the patient's hips off the table edge. It must be remembered that the forceps should be considered as a guide to the descent rather than as an extractor. With the use of regional anesthesia, time is of little importance, and the urge to hurry should be ignored.

It is difficult to believe that the early proponents of the obstetric forceps as an extracting aid ever dreamed that at a future time this instrument would be used by many operators routinely as a guide to the natural descent and delivery of the fetal head. Even today there are many who do not believe that the proper use of this device helps to preserve the integrity of the fetal cranial vault and its contents and, in some instances, may even aid in the correction of minor defects within this vault due to certain unfavorable pressures exerted during parturition.

The instruments used today do not differ on cursory examination from those fashioned by Chamberlen in the seventeenth century which, incidentally, did not become known by the profession until Chapman in 1733 published an illustrated description of them. On closer examination, however, the modern obstetric forceps embodies refinements which, when totalled, produce an instrument designed not only to facilitate delivery of the fetal head but one to preserve the integrity of this structure as well as the layers of the maternal pelvic floor.

It is not our intention to analyze and evaluate the various types of modern forceps in common use, but rather to make an effort to explain the results which may occur from their proper and improper applications.

Principle of application:

"The law of the forceps" indicates that the concavity of the pelvic curve of the forceps blades must face the presenting part (the arbitrary point on the fetal head that is rotating internally and anteriorly to come beneath the maternal symphysis pubis). "The plane of the forceps" is indicated by a line extending between the flat surface of the blades, this plane being at right angles to the sagittal suture of the fetal cranium (Figure 5). "The rule of the forceps" indicates how each blade should be applied. Because of the lock arrangement, this law had to be evolved. The handles cross in such a fashion that the left blade should be applied first. This rule applies to all occiput anterior and occiput posterior positions, the only exception being a right

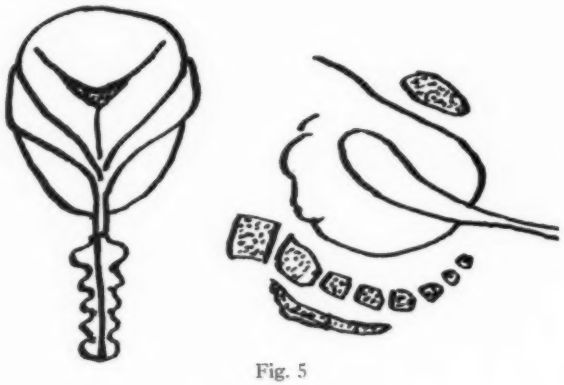


Fig. 5

Fig. 6

occiput transverse position, in which case the right or perineal blade is introduced first.

The preceding experimental evidence will indicate that a new rule may be adhered to in the future, that is, after the forceps blades have been introduced, and before locking them and applying traction, it should be ascertained that the *locking point directly overlies the triangular fontanel from which the lambdoid and sagittal sutures radiate.* If this rule is adhered to, we believe that compression effects will be minimized as the stress will be diffused through the basilar bony structures, sparing to some degree the more compressible cranial components (Figure 6).

SUMMARY

1. This is the first in a series of articles depicting the effects of cranial stress exerted on the fetal head during pregnancy and parturition.

2. The materials and procedures employed in this study have been described.

3. The anatomy of the parts under study have been set forth.

4. Anatomic changes occurring with the application of the forces employed have been depicted.

5. Predisposing factors influencing fetal distress have been discussed.

6. Forceps application and their traumatic effect have been discussed.

7. An additional rule for forceps application has been stated.

CONCLUSION

We assume that the proper application of forceps to the fetal head can be an aid in preserving the integrity of the fetal cranial structure by assisting in the normal completion of the mechanism of labor. However, the recognized pathologic alterations in normal physiology in the fetus during labor and delivery must be borne in mind and the degree of compression minimized so that the balance will be in favor of the amount of stress resulting from forceps use as compared to the forces at work during a spontaneous expulsion.

8006 Sunset Blvd.

REFERENCES

1. Munro, D.: Cranio-cerebral injury in new-born, in Oxford Medicine. Oxford University Press, New York, 1949, vol. 6, part 1, pp. 136(33)-136(49).

2. Holland, E.: Cranial stress in foetus during labour and effects of excessive stress on intracranial contents. J. Obst. & Gynaec. Brit. Emp. 29:549-571, 1922.

3. Arbuckle, B. E.: Cranial reinforcements from manipulative standpoint; articulations—stress bands—buttresses. J. Am. Osteop. A. 49:188-194, Dec. 1949.

LONG-TERM TREND AND ECONOMIC FACTORS OF PARESIS IN THE UNITED STATES

One of the chief aims of public health measures for the control of syphilis is the prevention of the disabling complications of late syphilis. The reasons for this objective are the human suffering and social disintegration caused by these late manifestations; the high costs to individuals, private organizations, and taxpayers for the care of those disabled and their families; and the losses which society sustains in productive years of life of persons disabled or dying prematurely from syphilis. These costs are known to be high. To mention only a few examples, the maintenance in public institutions of patients with syphilitic psychoses cost an estimated $40,295,000 in 1951; maintenance and assistance to the syphilitic blind was estimated in 1951 to cost $12,500,000; years of life expectancy lost because of premature death from syphilis was estimated at 142,000 man-years in 1950.

* * *

1. For the period 1900 to 1923 during which there was no effective syphilis control program and no effective therapy, the trend of paresis deaths was irregular and the slope of the trend line was not signficantly different from zero.

2. Malaria and other fever therapy were successful in reducing the mortality from paresis in the years 1923 to 1938, but the incidence of paresis as measured by first admissions figures did not diminish during this period.

3. Mortality from paresis apparently had reached a plateau shortly before the start of the national syphilis control program in 1938 and no further reductions seemed likely through fever therapy.

4. Soon after its inception, the national syphilis control program apparently was effective in reducing the incidence of paresis. Reductions in paresis deaths followed after a period of about 4 years.

5. Further reduction in first admissions and in mortality from paresis is indicated by the present trend.

6. Losses of expectation of life due to premature death from paresis amounted to 63,057 years and loss of income associated with this loss of life totaled $45,714,160.

7. The savings of productive years of life expectation for the estimated deaths prevented in 1948 by the national venereal disease control program amounted to 38,113 years. The value of the earnings of the persons saved in 1948 was estimated to be $49,413,557.—James F. Donohue, M.P.H., and Quentin R. Remein, A. B., *Public Health Reports,* August, 1954.

Fundamentals of Simple Office Surgical Procedures*

E. IVAN CHERASHORE, D.O.
Clifton, N.J.

Many surgical procedures can be satisfactorily performed in the physician's office, but even the simplest surgical procedures can be troublesome unless certain basic routine procedures are strictly adhered to. Observing fundamentals proved by actual practice will speed the procedure to a happy conclusion. All operations should be treated as major surgery, thus avoiding or minimizing complication or infection. An incorrect approach to the most simple suture procedure can prove to be of major consequence later. The physician should take time to be thorough for there are no short cuts in safe surgery.

PREMEDICATION

Premedication, 1½ grains of Nembutal or one of the other pentobarbitals, should be administered 50 to 60 minutes before the operation in the event that a local anesthetic (Novocain, procaine, Monocaine, et cetera) is to be used later. This is a must if more than 5 to 6 cc. of any agent for local or regional block anesthesia is to be administered, since amounts greater than this have been known to cause extreme shock in patients who have not received proper premedication.

CONSENT AND RELEASE

Before the operation, the patient or the parent or guardian, if the patient is under age, must sign an operative consent slip, and, if photographs are to be taken for diagnostic and/or teaching purposes, an additional phrase should be added to the consent to protect the physician.

Releases are important if a patient fails to follow exact instructions after having been specifically advised to do so. In such cases the physician should get the patient to sign a release relieving him (the physician) from any and all responsibilities. This signing of a formal release serves a twofold purpose:

1. It is required for legal purposes, although it is not a guarantee of legal immunity in the event of bad surgical judgment or poor surgery.

2. It should re-establish confidence in the physician, if confidence has been shaken by a "well-meaning" friend or relative. The idea is to disturb the patient to the point where he will follow instructions.

PREPARATION

Any hairy areas in the operative field should be shaved except the eyebrows; on numerous occasions shaved eyebrows have been known not to grow back. It is suggested that shaving extend well beyond the operative area in order to minimize the discomfort of adhesive tape removal. I prefer the Durham duplex razor. It is similar to a straight razor but has replaceable blades. Shaving should be done elsewhere than at the operating table, and the shaved area should be brushed off with a soft nylon brush to prevent foreign body infection.

SCRUB

All operative areas should be scrubbed with soap, preferably Ivory, and water for at least 10 minutes. When Gamophen soap is used the scrub time may be reduced to 3 minutes. Harsh soaps such as tincture of green soap should not be used for this purpose since they act as local skin irritants. This procedure should be used for clean procedures, such as removal of cysts, tumors, and old scars, and for all dirty traumatic wounds, which should be scrubbed briskly (if possible, while the patient is under anesthesia). After the wound is scrubbed, Arnold's solution, tincture of Metaphen, tincture of Merthiolate, or tincture of Zephiran should be applied to the area after which alcohol is applied. In children, it is best to use aqueous Zephiran since alcoholic solutions burn where there is a break in the skin. Properly, this scrub should be performed in the physician's "surgery" immediately before the operation.

The formula for Arnold's solution[1] is as follows:

Ethyl alcohol	600.0
Acetone	200.0
Mercuric chloride	1.0
Hydrochloric acid	10.0
Chrysoidin	2.0
Distilled water q.s.ad	1000.0

STERILIZATION

The physician should scrub his hands and don sterile gloves. All sharp instruments should be soaked in aqueous Zephiran, and it is good practice to keep in solution instruments which are used daily so that they are immediately available. It is also recommended that an emergency set of instruments be kept in solution ready for instant use. It should consist of needle holders, two curved mosquito hemostats, tissue scissors (curved), suture scissors (straight), and a few other instruments which are frequently used. They can be placed either in a Bard-Parker wet sterilization boat or in a covered Pyrex dish.

Stylets should be kept in the needles and the needles in sterile tubes.

ANESTHETIC

An anesthetic should be used whenever it seems necessary. Two per cent Novocain should be used if not more than 30 cc. are used. In order to avoid shock, 1 per cent Novocain should be used if it seems that more than 30 cc. are likely to be needed. A wheal is raised with a number 26 hypodermic needle; the area is then blocked, and larger needles are inserted through the wheal. The plunger should be pushed slowly to avoid tension pain. A .0013 per cent solution of Adrenalin added to the Novocain (1.3 cc. of 1:1,000 Adrenalin per 100 cc. of Novocain) will aid in promoting hemostasis.

It has been my experience that 2¼ cc. and 5 cc. Anestube Carpules containing Monocaine hydrochloride, 1.5 per cent, with epinephrine, 1:30,000, and Monocaine hydrochloride, 1.5 per cent, with epinephrine, 1:100,000, for use in Anestube three-ring syringes, are easiest to use and simplest to sterilize. And, most important, they provide prolonged effective anesthesia.

Local anesthetic should never be injected through a traumatic dirty or contaminated wound as the tip of the needle will carry the infection deeper into the surrounding tissues.

The surgeon must be certain to wait for the anesthetic to take effect.

*This paper was presented at the Fifty-Seventh Annual Convention of the American Osteopathic Association, Chicago, July 16, 1953.

Fig. 1. Langer's lines of cleavage of skin.
(Reproduced by permission of the publisher from Fig. 27, "Surgical Treatment of Facial Injuries," by V. H. Kazanjian and J. M. Converse. Copyright, 1949, by The Williams and Wilkins Company.)

LANGER'S LINES

All primary operative incisions should be made parallel to Langer's lines of skin cleavage (Figs. 1 and 2). This contributes to the formation of a fine hair-line scar.

DEBRIDEMENT

In debridement of traumatic wounds, the wound should be scrubbed, wound edges trimmed, and all macerated tissue removed, thus preparing the wound for primary union. It is recommended that two pairs of gloves be worn, the contaminated pair being removed immediately after debridement. All instruments and the gloves used for debridement should be discarded into a kidney basin.

SUTURE MATERIAL

For deep sutures or ligatures, cotton (5-0, 4-0, or 3-0) is preferable to any other material, since it has proved to produce less local or serum reaction than any other suture material, including catgut. Commercial sewing threads, number 60, 50, 36, and 24, are very inexpensive and may be used instead of the corresponding surgical suture; in most respects the effects are the same. However, "brooming" of commercial sewing thread makes it difficult to use with fine needles.

For skin closure, fine monofilament nylon (4-0 to 6-0) is preferable to twisted nylon or silk, not only because it is much stronger, but because the monofilament provides no place for spores to lie dormant and then multiply and cause infection. In tensile strength, 6-0 nylon is approximately equivalent to 3-0 silk. It must be noted that 5-0 and 6-0 sutures require four or more knots; because of its fineness nylon may untie if fewer than four knots are used.

Cutting edge needles are preferable for skin closure; round edge needles for internal sutures, that is, in the abdomen and intestines. In most cases a 3/8 curve is preferable to a 1/2 curve, and the atraumatic needles (wedged directly to suture) have no opposition whatsoever when going through the skin.

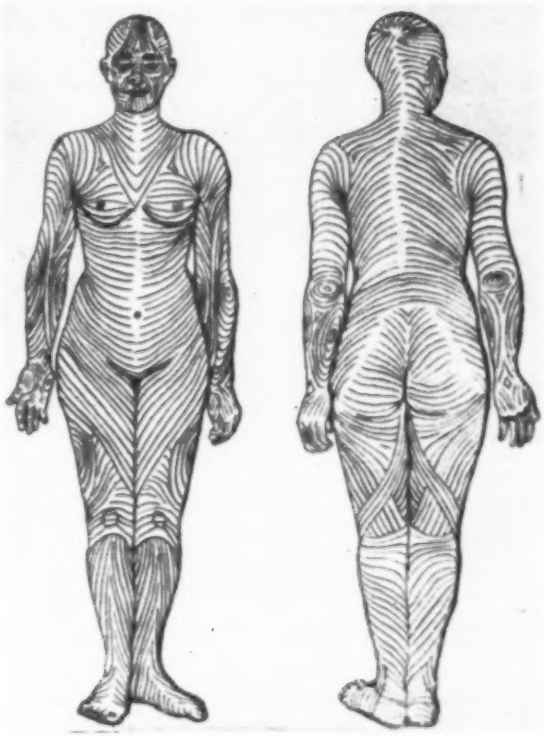


Fig. 2. Langer's lines of cleavage of skin.
(Reproduced by permission of the publisher from Fig. 14, "Reconstructive and Reparative Surgery," by Hans May. Copyright, 1947, by F. A. Davis Company.)

SUTURING

It is wise not to put sulfa powder or similar agents near the surface of a wound since they slow and even prevent healing of the wound edges. The application of any instrument pressure to the wound edge will result ultimately in areas of ischemia and necrosis and prevent formation of a fine lineal scar. For the immediate physical and future mental welfare of the patient, including the cosmetic effect, touching skin edges with forceps of any kind should be avoided. A fine lineal scar can be later searched out and exhibited proudly; a wide or elevated scar is apt to cause chagrin and dissatisfaction.

The edges of the cleaned wound should be undermined so that they can be approximated without any fear of undue tension. If the surgeon desires to raise a depressed scar or level off the edges of a scar, the best results are obtained by oblique undermining.

Sutures should be placed equidistant from the wound edges, with care being taken that the "bite" of the suture needle is also equal. Sutures are used to hold the edges in approximation, not to pull them together, and should be just firm enough to approximate the edges without causing puckering or ischemia; normal postoperative edema will pull the sutures taut.

It might be mentioned here that suturing, like any other operation, should be approached logically. If a wound is oblique or one side is lower than the other, compensatory placing of sutures with oblique undermining will aid in producing a better result.

DRAINING AND CLOSING

A wound should never be closed or sutured pri-

marily if more than 6 hours have elapsed since injury occurred.

All dry wounds should be completely closed; however, if cleanliness is doubtful or the presence of infection suspected, extreme caution must be observed. A small rubber drain should be inserted at the most dependent end of the sutured incision. A small identifying suture should be placed through the end of the drain, the free end being taped to the skin at a distance from the proposed area of the dressing. The skin edges are approximated with a suture; however, only one loop of the knot is tied at this time so as to allow loosening to permit drainage. The ends of the suture are left long to lie outside the dressing in apposition with the taped drain suture. The drain is removed in from 12 to 36 hours by pulling on the taped drain suture; then, without raising the dressing, the previously mentioned first loop of the suture is pulled taut, and the necessary knots are tied to secure the suture.

HEMORRHAGE

If the newly sutured wound should bleed, all sutures should be removed immediately, the source of bleeding located and ligated and then the wound should be resutured. It is much better to do this immediately than to chance probable subsequent complications which may necessitate repeating the entire procedure under more difficult conditions.

Hemorrhage during operation can be prevented by the use of Fibrin Foam, Gelfoam, Oxycel, or thrombin solution (either locally or intravenously), thus permitting the surgeon to perform a more successful operation in less time.

When an extremity is being operated upon, a tourniquet—a blood pressure cuff inflated to 240 to 260 mm.—should be used. The extremity should be elevated for 5 minutes, the cuff being inflated while the arm is still in the perpendicular position. The cuff can then stay in place for 2 hours without difficulty.

Hydrogen peroxide is used to remove the blood crusts in the cleansing of the surrounding skin area.

In the presence of oozing wounds, mechanics waste, rubber sponge, or loosely packed sponges with a snug pressure dressing will adequately accomplish hemostasis.

DRESSINGS

It is wise to use xeroform gauze over all primary wounds as an antiseptic and to prevent adherence of the dressing. Occasionally, in face wounds, collodion may be used directly without any other dressing, but rhinoplastic wounds, dermatome grafts, and all reconstructive repairs require exclusive use of xeroform gauze.

The formula for the preparation of xeroform gauze[1] is as follows:

Bismuth tribromophenate	3.0
Paraffin	1.0
White wax	1.0
Petrolatum	95.0

Cotton wads and adhesive tape should never be placed against an open wound, nor should adhesive tape ever be placed completely around an extremity. In cases in which a bandage or dressing goes around the extremity, elevation should be advised in order to prevent edema of its distal portion. The adhesive "skid chain" method may be utilized in the application.

Dressings should not be changed too frequently, and adhesive tape should always be removed bilaterally *toward* the wound.

SUTURE REMOVAL

Sutures should be removed in 5 to 10 days following operation, according to the type of wound and its location. Since the face, however, is particularly receptive to suture marks, several alternating sutures may be removed on the third day if feasible. In operations on weight-bearing areas a stronger suture material must be inserted at a greater distance from the edge of the wound and left in for a longer period. In facial wounds collodion should be used following the removal of *all* sutures.

In cases in which a suture might untie, for instance, around the mouth and chin of a child, if both short ends are still visible, the ends can be grasped in a hemostat and twisted a few times, after which a drop of collodion, air-stream dried, will seal it tighter than any of the surrounding sutures for an indefinite time.

MEDICATION

Antibiotics should be utilized whenever necessary, particularly in cases which require a long time for healing or in which there is any question of contamination.

Tetanus antitoxin must be used when indicated. Sensitivity to the antitoxin should first be tested.

Sufficient medication should be prescribed to relieve postoperative pain.

CONCLUSION

Observance of the foregoing technics will do much to achieve painless surgery. A procedure completed quickly, painlessly, and thoroughly in the physician's office results in a happy, appreciative patient.

35 Madison Ave.

REFERENCE

1. May, H.: Reconstructive and reparative surgery. F. A. Davis Co., Philadelphia, 1947.

RADIATION EXPOSURE IN THE UNITED STATES

Today, exposure to radium sources potentially affects many individuals. In medicine, in addition to the patients undergoing treatment, these individuals include nurses, technicians, therapists, radiologists, dermatologists, and others who handle or prepare radium. Stenographers and other persons who work in the vicinity of the radiation source or patients being treated are also possibly subject to chronic exposure.

Industry was using 50 curies of radium in radiography in 1948. Several hundred curies were utilized in the luminous componnd industry during World War II. Exposures to radium occur also in the mining and processing of radioactive ores; in the manufacture of items containing radium such as static eliminators, electronic tubes, and radium and neutron sources; and in industries which reprocess used radium sources or recover radium from used equipment. Radium losses and spills, which occur despite the most conscientious handling, produce other sources of exposure. Additional, but needless, exposures occur in the use of radium-bearing mines and springs for alleged "medical treatments."

Radium can be purchased on the open market. No formal application or special facilities are required. Currently, a total of about 1,000 curies are in medical and industrial use in the United States.

Sound radiological practice suggests that official health agencies should learn where radium sources are used in their communities and should assure themselves that proper precautionary measures are maintained.—James G. Terrill, Jr., C.E., M.B., *et al., Public Health Reports,* March, 1954.

Arrhythmias as Medical Emergencies*

JOHN J. LALLI, D.O.
Jackson Heights, N.Y.

Most of the cardiac arrhythmias might be considered emergencies since acute distress usually results in a change in heart rhythm. Arrhythmia which occurs in patients with or without cardiac disease may cause many symptoms such as pounding, fright, precordial aching or severe pain, vertigo, syncope, vomiting, collapse, and, rarely, congestive heart failure.

1. Proper identification and evaluation of cardiac arrhythmias are essential not only for the application of proper treatment, but also to avoid unnecessary and possibly harmful treatment.[1]

2. It is the purpose of this paper to discuss those arrhythmias which are usually recognized at the bedside; they may be classified as follows:[2]

Paroxysmal tachycardias
1. Auricular fibrillation
2. Auricular flutter
3. Auricular and nodal tachycardia
4. Ventricular tachycardia
5. Ventricular fibrillation

Complete heart block

Other arrhythmias
1. Sinus tachycardia
2. Sinus bradycardia
3. Premature beats

The most severe circulatory derangements occur following the onset of ectopic arrhythmias with rapid rate, that is, the paroxysmal tachycardias.

AURICULAR FIBRILLATION

Auricular fibrillation, the most common serious arrhythmia, occurs most frequently in rheumatic and arteriosclerotic heart disease.[2] Auricular fibrillation may be seen in Grave's disease, following surgery, and in febrile diseases. Both chronic and paroxysmal auricular fibrillation occasionally are seen without organic heart disease.[3] Paroxysmal auricular fibrillation usually begins abruptly, the ventricular rate being between 120 and 160 and the rhythm being totally irregular. When heart failure is not present, these patients should be observed for several hours, at rest and with sedation. If fibrillation continues, 3 grains of quinidine should be given orally every 2 hours for five doses. The first dose may be used to test the patient's sensitivity to quinidine, for if an allergy to the drug exists, reactions will usually occur within 2 hours.[2] If no change occurs in the rhythm after 4 hours, the dose may be increased to 6 grains every 2 hours. Quinidine has very little cumulative effect, its accumulation coming to an end in 4 or 5 days.[4] Sometimes it is necessary to raise the dose of quinidine to 9 grains every 2 hours, but if regular rhythm is not restored with these doses after 36 hours, quinidine should be discontinued.

Master, Moser, and Jaffe[2] report excellent results with intramuscular quinidine. A 20 per cent solution of quinidine sulfate in propylene glycol (3 grains per cc.) is used. This solution remains colorless and its intramuscular injection is substantially painless. The intramuscular and oral dosages are the same, and toxicity is no greater when quinidine is administered intramuscularly. Intramuscular quinidine is especially valuable for patients who cannot tolerate oral administration. Intravenous quinidine is dangerous, and its use must be carefully controlled. Quinidine lactate, the intravenous form, comes in 10-cc. capsules containing .65 gram. Since most patients will respond to oral or intramuscular quinidine, there is rarely a need for intravenous administration.

If sinus rhythm is restored, the dose should be gradually reduced, and a maintenance dose should then be established. The necessary maintenance dose may vary from 3 to 6 grains three times a day to 6 to 9 grains three or more times a day.

When used properly, quinidine is considered to be safe and effective; however, there are a number of premonitory signs and symptoms of quinidine overdosage.[4] There are the symptoms of cinchonism—impaired hearing, ringing in the ears, blurred vision, lightheadedness, giddiness, and tremor—as well as nausea, vomiting, gastric discomfort, abdominal cramps, and diarrhea. Quinidine frequently produces respiratory depression, shock, and convulsions in animals, particularly following intravenous administration, and it may have the same effect on humans.

Contraindications to the use of quinidine are: (1) chronic valvular disease, (2) failure of quinidine therapy, (3) old age, and (4) congestive heart failure.

Digitalis is the drug of choice when fibrillation accompanies heart disease, congestive heart failure, mitral stenosis, and chronic arteriosclerosis. At times auricular fibrillation with severe myocardial failure may threaten life, emergency treatment must be instituted, and the patient must be digitalized, by either the rapid or slow methods.[5]

Rapids methods are:

1. Cedilanid, 1.6 mg. intravenously, followed by 1 tablet two or three times a day to maintain digitalization.

2. Digitoxin, 1.2 mg., for single dose digitalization. The drug may be given orally or intravenously in the same dosage and results in digitalization within a few hours.

3. Digoxin, 1 mg. intravenously, for single dose digitalization.

4. Strophanthin, 0.006 gram (1/100 grain) intravenously immediately. (Strophanthin or ouabain should not be used if the patient has been taking digitalis.)

Slow methods are:

1. Digitalis purpurea leaf 0.09 gram (1½ grains) three times a day until digitalized (approximately 21 mg. per kg. or 1½ grains per 10 lb. of body weight).

2. Cedilanid, 0.5 mg.; Digoxin, 0.25 mg.; or digitoxin, 0.2 mg.; 1 tablet three times a day of any one of these preparations until digitalized.

Combined administration of quinidine and digitalis is sometimes practiced, especially in auricular fibrillation. Occasionally refractory cases have occurred in which quinidine did not seem to prevent the paroxysms of auricular fibrillation until the patient was digitalized. Gold[6] states, "The fact remains, however, that their combination in certain doses and in particular individ-

*Presented at the New York State Osteopathic Society Conference on Medical Emergencies, Utica, February 20, 1954.

uals appears to have been responsible for some hazardous effects, and the experimental evidence is fairly strong that quinidine in otherwise nontoxic doses may sometimes produce unexpected and disastrous results in the heart poisoned by digitalis. These are the reasons for the position I have adopted in this matter—to avoid the simultaneous uses of quinidine and digitalis wherever possible, especially where large doses of both may be necessary."

In recent literature there are reports of good results with the use of procaine amide (Pronestyl hydrochloride) in auricular fibrillation although it is more widely used in the management of ventricular arrhythmias.[7]

Strong[8] states that in auricular fibrillation of known short duration, quinidine is the drug of choice; whereas in cases in which auricular fibrillation is of longer duration, he prefers the use of digitalis first plus oxygen therapy (tent in hospital) for at least 24 hours and the use of Pronestyl or quinidine as the last resort if digitalis and oxygen therapy fails.

AURICULAR FLUTTER

The ventricular rhythm in auricular flutter is usually regular with a rate of 125 to 180, but because of varying degrees of atrioventricular block, it may be irregular and may resemble auricular fibrillation. Auricular flutter usually occurs in paroxysms, but it may become chronic and continue indefinitely.

If the attack does not cease spontaneously within a few hours, digitalis or quinidine should be used. Digitalis should be administered to all patients with auricular flutter and heart failure, as it diminishes the ventricular rate and increases cardiac efficiency.

Scherf[9] states that digitalis will often convert auricular flutter to fibrillation and that the sinus rhythm will be restored when the drug is discontinued. He adds further that conversion to regular rhythm is contraindicated in patients with mitral stenosis in which there is pulmonary edema or hemoptysis. Fibrillation seems to protect patients from a recurrence of these incidents. Auricular fibrillation seems also to protect some patients with coronary sclerosis from angina pectoris. The reasons for this are not known.

In the treatment of auricular flutter digitalis is the drug of choice, and digitalization corrects the flutter to fibrillation. When fibrillation replaces flutter, withdrawal of digitalis results in the return of normal heart rhythm. The rapid or slow methods of digitalization may be used.

Quinidine is indicated when attacks are paroxysmal and when congestive failure and heart damage and emboli are not present. The maintenance dose of quinidine varies from 3 to 10 grains four to five times a day. When rhythm returns to normal, the dose is reduced to 3 to 6 grains three times a day and continued for several weeks. If this therapy is ineffective, the patient should be digitalized and a maintenance dose continued. A certain degree of atrioventricular block is thus continued, and in the presence of an attack the ventricular rate may not increase markedly in spite of rapid auricular contractions, which may serve to keep the patient symptom-free during an attack. However, even if the patient is sufficiently digitalized, tachycardia may occur and symptoms reappear.

AURICULAR AND NODAL TACHYCARDIA

Often both these types of tachycardia are functional.[2] Use of tobacco or alcohol, infections, gastric distention, Grave's disease, allergic reactions, and tense emotional states may precipitate an attack, which usually begins suddenly, with a regular ventricular rate between 180 and 220 beats per minute. Usually a 1:1 ventricular response occurs, but sometimes it may be 3:1 or 2:1 with a resultant ventricular rate between 75 and 100.

It is well established that many patients with daily attacks do not have any difficulties, and they have learned that certain movements stimulating the vagus nerve will cause the attack to disappear.

Frequently an attack will disappear spontaneously, but if it does not, pressure should be exerted on the carotid sinus or eyeballs. Carotid sinus pressure should not be applied to both sides simultaneously, especially in old people, and it should be limited to 10 to 20 seconds. Simultaneous pressure is applied for 20 to 30 seconds over the closed eyes just below the supraorbital ridge. If these maneuvers fail and tachycardia continues, quinidine or digitalis should be used.

Syrup of ipecac may be used to cause vomiting, which may abolish the attack. Owing to the severe nausea which ipecac causes its use is limited.

Mecholyl may be used subcutaneously; the initial dose is 20 mg. This dose may be repeated in 20 minutes, if necessary, but a syringe containing 1 to 2 mg. of atropine sulfate should be ready to counteract any adverse effects. Mecholyl should not be used in patients with bronchial asthma, coronary disease, or hyperthyroidism.

Acetylcholine, a less toxic parasympathomimetic drug, may also be given in doses of 20 mg.

Neostigmine, another of the parasympathomimetic drugs, may be used in auricular and nodal tachycardia. It is given intramuscularly in doses of 1 mg. Atropine sulfate should also be available for emergency use following acetylcholine or neostigmine administration.

Neosynephrine, in intravenous doses of .5 to 1 mg., has caused a simultaneous reversion to normal rhythm by increasing the blood pressure.[10]

In the vast majority of patients, when there is no urgency, the method of choice is quinidine by mouth. The first and second doses of quinidine (0.4 gram) are given 1 hour apart and are followed by 0.2 to 0.4 gram every 2 hours until the attack subsides.

If the attacks of paroxysmal tachycardia occur frequently, prophylactic therapy with quinidine is the procedure of choice. The dose is adapted to the requirements of the patient.

VENTRICULAR TACHYCARDIA

Although ventricular tachycardia is infrequent, it usually is associated with severe myocardial damage, particularly that caused by coronary artery disease.[2] It may occur in rheumatic heart disease, during cardiac catheterization, and in normal individuals. Digitalis may be an exciting factor in producing ventricular tachycardia.

Oral or intramuscular quinidine is usually effective in ventricular tachycardia. Occasionally intravenous administration (15 grains) may be necessary, but this method should be used only in rare instances because of the increased toxicity with this route.

Since sensitivity to quinidine does occur, the availability of a substitute (procaine amide) is important.[7] Even if quinidine must be discontinued because of a reaction, procaine amide may be substituted without any interruption of the schedule. Occasionally the additive action of the two drugs on the heart achieves therapeutic success that might otherwise have been impossible.

For all practical purposes, the cardiac action of procaine amide is identical with that of quinidine. It suppresses tachysystolic, or extrasystolic, centers, depresses myocardial conduction, prolongs the Q-T interval and is prone, on the other hand, to create new ectopic centers. Similarly to that of quinidine, the maximum effect is observed clinically and electrocardiographically 2 to 4 hours after an oral dose.[11]

Bellet[7] has used procaine amide with excellent results in ventricular tachycardia, including cases in which quinidine failed. Pronestyl is given orally in doses of 250 to 500 mg. every 3 to 4 hours or intravenously in doses of 2 to 10 cc., 100 mg. per cc., given 1 cc. a minute until effect is obtained. Ventricular tachycardia may be converted to regular sinus rhythm in from 30 seconds to 2 minutes in 75 per cent of these cases.

By clinical experimental tests, procaine amide has been found to be one third to one fourth as strong as quinidine by weight. Therefore, one may be substituted for the other, if it is remembered that 250 mg. of procaine amide are equivalent to 1 grain of quinidine.

Procaine amide reduces the blood pressure to shock levels in direct proportion to the rate of intravenous injection. This does not occur if it is administered orally. Quinidine acts similarly. Therefore, when either is administered intravenously, the electrocardiogram and blood pressure must be concurrently observed. The injection should be performed very slowly, over at least a 5-minute period. It should be emphasized that the intravenous route is only rarely indicated. Except for unconscious patients and those unable to ingest medicine, oral administration is preferable.

Other drugs that have been used in the treatment of ventricular tachycardia should be mentioned:[2]

Intravenous magnesium sulfate, in doses of 10 to 20 cc. of a 20 per cent solution, has occasionally been effective.

Intramuscular atabrine, 0.4 gram, may be found effective in some cases.

Intravenous morphine sulfate, 1/6 to 1/3 grain, has been successful. This may be repeated every hour if it is needed.

Oral potassium salts, citrate or acetate in syrup or water or chloride as enteric-coated tablets, have been administered in stubborn cases and in cases in which ventricular tachycardia was a sequel to digitalis overdosage or quinidine sensitivity.[12] It is administered alone, in doses of 1 to 5 grams two to four times daily, or with quinidine.

VENTRICULAR FIBRILLATION

Although some sudden deaths are due to ventricular fibrillation, it is almost impossible to diagnose it clinically. Ventricular fibrillation occurs with myocardial infarction, in digitalis overdosage, and during anesthesia. Unconsciousness, shock, and a pulseless state occur. If ventricular fibrillations continue for longer than 30 seconds, convulsions usually occur.

Since attacks of ventricular fibrillation may resemble Stokes-Adams seizure secondary to complete heart block and cardiac standstill, the differential diagnosis must be made with the electrocardiograph.

In many cases the attack will cease or death will occur before treatment can be undertaken. Epinephrine and ephedrine, which are so valuable in cardiac asystole, are contraindicated.

Six to 9 grains of intravenous quinidine lactate should be given immediately.[2]

Magnesium sulfate, 10 cc. of a 20 per cent solution, may be effective.

In acute attacks, intravenous atropine, 2 mg., has been successful. Daily intramuscular injections of 0.5 mg. have been used for patients with paroxysmal ventricular fibrillation.[13]

SINUS TACHYCARDIA

Sinus tachycardia is associated with emotional, metabolic, toxic, or febrile conditions, and with congestive heart failure. The cause should be treated.

SINUS BRADYCARDIA

Sinus bradycardia is caused by an increase in vagal tone and/or a decrease in sympathetic tone, with the rate sometimes falling below 40. Dizziness and syncope result if the rate gets this low. Sinus bradycardia may be incidental in athletes and in pregnancy and, in a mild case, may not require any treatment.

In severe cases, the treatment consists of elimination of toxicity; atropine sulfate, 0.4 to 0.8 mg. subcutaneously, every 3 hours; or 5 minims of epinephrine.

PREMATURE BEATS (EXTRASYSTOLES, ECTOPIC BEATS)

Premature beats may result in precordial distress, anxiety, or palpitation. Although most patients can be helped by reassurance, sedation, and rest, severe and persistent premature beats require active treatment. In the treatment of premature beats the location of the origin of the ectopic beats is essential before instituting therapy. Underlying conditions, such as anemia, excessive use of coffee and tobacco, cholecystic disease, peptic ulcer, and chronic fatigue, must be corrected.[14]

Quinidine, 3 to 6 grams every 2 hours for five doses, is usually effective.

Papaverine, 60 to 90 grains intravenously, is also used and may stop ventricular premature systoles and prevent fatal ventricular fibrillation. Papaverine may also be used orally, 3 grains, four to five times daily.

Aminophylline (3 grains four times a day) may prove beneficial.

Sedatives, phenobarbital, ½ grain four times a day, or bromides, 5 grains three times a day, may be useful in nervous patients.

Limitation of coffee, tea, alcohol, and tobacco may be the only therapy necessary in some cases.

Digitalis frequently makes the irregularity worse.

Pronestyl is administered intravenously in doses of 2 to 10 cc., 100 mg. per cc., or orally in doses of 250 to 500 mg. four times daily. Master and his associates[2] have found Pronestyl very effective in stopping or preventing ventricular premature beats and prefer Pronestyl to quinidine. They also point out the clinical importance of premature beats preceding the onset of paroxysmal tachycardia, during operative procedures, or following coronary occlusion.

HEART BLOCK

Heart block usually occurs in individuals past 50 years of age and is associated with organic heart disease secondary to coronary arteriosclerosis or digitalis overdosage.

The onset of heart block is abrupt and without apparent cause, an attack developing while the patient is at work, or even while resting in bed. Usually the patient recovers from such an attack and requires no therapy, though occasionally the seizure may be fatal. Murphy[5] cites a case of complete heart block and a rate of 20 to 35 beats per minute in a patient who lived for 25 years after the initial episode.

During the attack, 1 cc. of a 1:1,000 solution of

epinephrine is given subcutaneously and repeated every 2 hours for several doses, or epinephrine in oil (1 cc.-2 mg.) can be given every 12 to 24 hours intramuscularly.

After the acute attack is over, capsules of ephedrine sulfate (¼ to ½ grain) may be given orally four times a day if the patient is subject to recurrences.

Benzedrine, 5 to 10 mg. four times a day; Metrazol, 15 mg. twice a day; barium chloride, ½ to 1 grain three times a day; or thyroid extract, 1 grain twice a day, may be administered.

Atropine sulfate, 1/75 grain twice a day, or tincture of belladonna two or three times a day is used until evidence of atropinism occurs. Recently Scherf[11] stated, "The use of atropine in heart block, so popular a few years ago, is not justified. With the increase in the auricular rate, the degree of heart block may be increased and a partial change into a complete block."

Employment of digitalis in patients with partial block should follow the rules that apply to all cardiac patients. When decompensation and myocardial failure are evident, digitalis is indicated. Large doses should not be used, that is, not more than 0.2 gram of digitalis daily, and the patient must be watched carefully.

The utilization of standard drugs or drugs which have developed from recent research does not preclude the philosophy of the osteopathic concept in the management of cardiac arrhythmias in medical emergencies.

There is no doubt that arrhythmias occur in normal individuals without cardiac disease in whom etiologic factors are such that they are impossible to distinguish. Rice,[15] in a moving picture, "Cardiac Changes Following Certain Vertebral Lesions," described a cardiac syndrome resulting from vertebral lesions. In order of appearance in experimental animals these changes include:[16]

1. Changes in heart rate and rhythm, associated with dilatation of arterioles and capillaries of the myocardium

2. Petechial hemorrhages in coronary capillaries including vasa vasorum

3. Increasing hyperemia and edema of the myocardium

4. Organization of coagula and overgrowth of connective fibers

5. Increasing myocardial fibrosis with degeneration and atrophy of cardiac muscle. These postmortem findings have been described in experimental animals. Reversible changes in the abnormal heart of experimental animals with third or fourth thoracic lesions have been studied. Before the heart has been too greatly injured by repeated myocardial hemorrhages and increasing fibrosis, return to normal structure is to be expected if the lesions are corrected.

Only in this syndrome has there been described histologic evidence that the vertebral lesion has etiologic importance. Such evidence of the value of the manipulative approach to cardiac arrhythmias by correction of vertebral lesions of the first, second, and third cervicals and the upper dorsals, as described by Becker, [17] Tuttle,[18] Downing,[19] Burns,[16] and many others, may be produced by future osteopathic research.

Recently, Strong[20] stated: "The current of injury is decreased as the vagus is stimulated." Two points should be borne in mind, therefore, by physicians who are, as I am, convinced of the great value of osteopathic manipulative therapy and who use it extensively. They are, first, that sympathetic stimulation may result in an increase of the current of injury in myocardial infarction and, second, sympathetic stimulation, because it increases the automaticity of nonpacemaking tissues, may evoke ectopic beats, that is, produce premature ventricular contractions, ventricular tachycardia, or ventricular fibrillation.

The most successful results in the management of cardiac arrhythmias are possible only when the exact nature of the disorder of rhythm is established both in normal and diseased hearts. Medical emergencies in arrhythmias, therefore, depend on the condition of the heart rather than on the disorder of the cardiac rhythm.

74-09 37th Ave.

REFERENCES

1. Reimann, H. A., ed.: Treatment in general medicine: Progress volume. F. A. Davis Co., Philadelphia, 1952.
2. Master, A. M., Moser, M., and Jaffe, H. L.: Cardiac emergencies and heart failure. Lea & Febiger, Philadelphia, 1952.
3. Master, A. M., and Eichert, H.: Functional paroxysmal auricular fibrillation. Am. J. M. Sc. 211:336-345, March 1946.
4. Gold, H.: Quinidine in disorders of the heart. Paul B. Hoeber, New York, 1950.
5. Murphy, F. D.: Medical emergencies. Ed. 4. F. A. Davis Co., Philadelphia, 1953.
6. Gold, H.: *Op. cit.*, ref. 4, p. 92.
7. Bellet, S.: Management of cardiac arrhythmias. Panel session, New York Heart Association, Jan. 26, 1954.
8. Strong, W. B.: Personal communication.
9. Scherf, D.: Management of cardiac arrhythmias. Panel session, New York Heart Association, Jan. 26, 1954.
10. Decherd, G. M., Jr., and Herrmann, G. R.: Association of paroxysmal arterial tachycardia with atrial flutter or fibrillation. Am. Heart J. 28:457-475, Oct. 1944.
11. Scherf, D.: Treatment of cardiac arrhythmias. Circulation 8:756-768, Nov. 1953.
12. Schwartz, S. P.: Management of cardiac arrhythmias. Panel session, New York Heart Association, Jan. 26, 1954.
13. Schwartz, S. P., and DeSota-Pool, N.: Cited by Master, A. M., Moser, M., and Jaffe, H. L.: *Op. cit.*, ref. 2.
14. Vigderman, D. L.: Treatment of cardiac arrhythmias. J. Am. Osteop. A. 51:475-478, June 1952.
15. Rice, R. W.: Cardiac changes following certain vertebral lesions (a moving picture with sound). American Osteopathic Association, Chicago, 1948.
16. Burns, L., and Treat, C. L.: Incidence of certain etiologic factors in cardiac disorders. J. Am. Osteop. A. 52:396-372, March 1953.
17. Becker, A. D.: Cited by Vigderman, D. L.: *Op. cit.*, ref. 14.
18. Tuttle, L. K.: Cited by Burns, L, and Treat, C. L.: *Op. cit.*, ref. 16.
19. Downing, C. H.: Cited by Vigderman, D. L.: *Op. cit.*, ref. 14.
20. Strong, W. B.: Cardiac dynamics in cardiac reserve. Unpublished paper presented at the 1951 meeting of the New York State Osteopathic Society at Syracuse.

ADDITIONAL REFERENCES

Conn, H. F., ed.: Current therapy, 1953. W. B. Saunders Co., Philadelphia, 1953.

Goldberger, E.: Heart disease. Lea & Febiger, Philadelphia, 1951.

OBESITY

Obesity is a serious and dangerous health hazard that no person should tolerate any more than he would continue to ignore a malignant cancer. Those of us who are concerned with public health hear much about the importance of chronic diseases such as hypertension, kidney disease, coronary artery disease, hardening of the arteries, diabetes, and liver disease in our health programs. Present evidence indicates that if we could control obesity, we would do more in one stroke to control these important diseases than with any other single health measure.—James M. Hundley, M.D., *Public Health Reports,* September, 1954.

THE JOURNAL OF THE
AMERICAN OSTEOPATHIC ASSOCIATION

Published monthly by the American Osteopathic Association

Publication Office, 100 S. Kenilworth Ave., Oak Park, Ill.
Editorial Office, 212 E. Ohio St., Chicago 11, Ill.
Address all communications to the Chicago Office

EDITORS

RAYMOND P. KEESECKER, D.O.....Editor
KATHERINE BECKER.....Assistant Editor

OFFICERS

R. C. MCCAUGHAN, D.O.....Executive Secretary
CLAYTON N. CLARK, D.O.....Business Manager
ROSE MARY MOSER.....Treasurer

COMMITTEE ON EDITORIAL POLICY

ROBERT B. THOMAS, D.O., CHAIRMAN.....Huntington, W. Va.
ROBERT E. COLE, D.O.....Geneva, N. Y.
W. DON CRASKE, D.O.....Chicago

Subscription . . . . . Ten dollars a year in advance

Vol. 54 November, 1954 No. 3

II—RESEARCH AND EDUCATION IN OSTEOPATHY

This editorial is the second in a series on the Cole thesis on research and education in osteopathy,[1] which was appraised in the October JOURNAL *as a document which would prove indispensable to the student of medical history, both without and within the osteopathic profession. The editorial series will review the thesis in detail and will attempt to interpret its findings and relate them to living osteopathic history.*

Almost no historical appraisals have been made of medicine generally by social historians. The projected monumental study of the history of medicine by Sigerist (of which only the first volume has appeared) will deal with the entire field of medicine world-wide as a social discipline. But doubtless there will remain many peculiarly American areas of medicine awaiting a social evaluation.

Osteopathy emerged as a reform movement out of American medical practice of the late nineteenth century, beginning as a kind of secession. With the perspective now made possible by the lapse of years, a study of osteopathy's origins and its broad objectives reveals it to be a movement generally seeking a new orientation of medicine.

Cole[1] refers to other groups that have arisen in the past, professing to have discovered a new method of treatment, only to last a brief period. He suggests that osteopathy's survival and growth as an independent group in medicine may be due in part to the willingness of the profession to investigate its own basic principles —thereby fulfilling its destiny, first, by a continuing re-orientation of itself.

The Cole thesis uncovers the historical and fundamental bases of osteopathic medicine. Rapidly developing, the new movement was characterized by an early, even though limited, recognition of the graduates of osteopathic schools as physicians and surgeons within the generally accepted meaning of those terms. The profession's period of emergence out of organized medical practice of the first decade of the twentieth century soon gave way to its decades-long clinical period—its establishment and gradual acceptance clinically by larger and larger sectors of the social body as an unlimited school of medical practice apart from American organized medicine (American Medical Association).

Just as osteopathy's phase of emergence gave way to its clinical phase, its clinical phase in turn gave way in the early '40's to the beginnings of its age of challenge, a challenge posed to it by society that osteopathy fit itself to fill the place that is being so rapidly created for it. These are some of the facts that point to osteopathy as one of the richest fields in all medicine for historical and social study.

Writing the story of osteopathy presents a much greater problem than that of compiling an accurate record. To be sure, that must be done objectively and wholly within the criteria of historical research. But osteopathy possesses many sociologically related aspects worthy of investigation by competent scholars. It has long been claimed by the American Medical Association that the osteopathic profession is an entirely sectarian movement, with strong cultist characteristics. If it be such, a timely study would be one which would search out the reasons for the progressively widening social and legal acceptance of osteopathy as an independent school of medicine, effectively countering the dicta of one of the most powerful private agencies in modern Western society. That study could determine if for more than 60 years great sectors of the American people have been and continue to be the victims of a gigantic hoax.

Even so broad an approach would leave unstudied the specific claim of an original contribution to medicine which the profession makes for itself and which encompasses all the postulates of the osteopathic concept—osteopathy as a philosophy, science, and art of medicine, including the distinctive role of manipulation as therapy. That claim in itself poses a scientific and clinical problem for which the data necessary for solution are not yet available. Osteopathic theory as a possible part of medical science has only begun to be evaluated by standards of research acceptable to the scientific world. Osteopathy has far to go, both in its presentation of fundamental research and in the establishment of incontestable clinical proof. But its social aspects as they are related to medicine are now ripe for study, providing it be done by the methods of an informed scholarship, such as characterize the Cole dissertation.

The purpose of "Research and Education in Osteopathy" as set forth by its author is to trace the

1. Cole, W. V.: The development of osteopathic research and education. Thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts, Northeast Missouri State Teachers College, Kirksville, Mo.

development of research activity as an integral part of the osteopathic profession, to evaluate its role in the profession's growth and improvement, and to show the relational aspect of research activities to the profession's development. Since no evaluation of osteopathy has yet been made which would meet to any degree present standards of historicity, the Cole thesis can readily prove to be a rich secondary source for the serious studies of the osteopathic movement yet to be done.

Cole recognizes that the status of osteopathy today "rests chiefly upon a foundation of education and research." He is well aware that the profession has been beset by numerous problems which must be taken into account in any complete study of its development—practice rights; legislative enactments; judicial rulings; and its relationship to medical practice of the turn of the century (allopathy, homeopathy, and eclecticism); to chiropractic which developed in osteopathy's wake; and, finally, to organized medicine of the present era. But these matters Cole considers of lesser importance to the understanding of the development of the osteopathic profession than education and research. He emphasizes that "The attainments of osteopathic research and education are criteria by which the profession can best be judged." He does a quite complete survey of osteopathic research activities, linking them to osteopathic educational activities when an understanding of the latter is an aid to a clearer understanding of the former.

Cole is convinced that any account of osteopathic research must be grounded in an understanding of the origin of the osteopathic concept of medicine and the beginnings of the osteopathic profession—an approach which must reckon with the various forces which brought about osteopathic research. He opens his study with a brief sketch of Andrew Taylor Still, attempting to interpret his role within the social milieu into which he was born and in which he worked. He is seen not as the charismatic figure he was held so long to be by many of his "followers," not as the "cultist, quack, and charlatan," not as the "harmless but effective bone setter." For a moment, he appears in the Cole study as an understandable but unique figure, animated by a spark of intuitive and creative genius, a man emerging from a legend.

This accurate and brief appraisal of Still suggests the need of a full-length portrait, a biography to be done not only by present-day historical standards, but also by a scientist capable of relating Still's contribution to medicine much as Sir Charles Sherrington, in "Man on His Nature," related the work of Jean Fernel, the little-known sixteenth century physician, to modern physiology. Such a creative work, however, must await a medical biographer possessing a rare combination of scholarly breadth, total objectivity, and warm human understanding. And he would need to know medical history as a social discipline. There are many individuals today within the osteopathic profession sufficiently mature in their thinking to appreciate a definitive biography of the founder of osteopathy. There are individuals within the medical profession who have emancipated themselves from the conditioned point of view of organized medicine that it alone possesses the capacity to receive the "truth" about medicine. All of these individuals would welcome a definitive study of this little-known figure.

No adequate understanding of the beginnings of osteopathy is possible without knowledge of the condition of medical education in the United States at the turn of the century. Cole, therefore, early in his thesis, refers to Abraham Flexner's "Medical Education in the United States and Canada." The Flexner study, which appeared in 1910, revealed the "deplorable conditions" existing in both medical education and research in the United States. Bitterly criticized in certain educational circles, it is now rated as a classic in the field it covered. One result of the Flexner report was to institute—it was a powerful catalytic agent—changes in education based upon progress in the medical sciences. These advances were moving forward, mainly in Europe, at about the same time that Still was formulating his theory of osteopathy. Perfection of the microscope, the consequent development of histology and pathology, a knowledge of the technics of asepsis—all were factors in the advancements in medicine and were preliminary to the development of research as an integral part of medicine.

The timing of the Flexner report was perfect. Progress in the sciences had already paved the way for the advances both in medical and osteopathic education which were precipitated by the Flexner findings. For the next 25 years "Medical Education in the United States and Canada" became the pacemaker for educational progress in medicine. It also provided a powerful incentive to the new medical group (osteopathic profession), although the profession's leaders were scarcely conscious of it as a motivating force. The result was the development of a strong determination by these leaders to elevate osteopathic educational standards, even while they sought to bring about a new orientation in medicine.

It is not surprising that leaders of osteopathy became confused during the process of becoming dissociated from organized medicine—osteopathy's phase of emergence. Set adrift, their confusion arose out of a mistake in identification, a confusion that exists largely to this day. Organized medicine was mistaken for the continuum of medicine. The lines that were so rapidly and sharply drawn between the two camps, the American Osteopathic Association and the American Medical Association, the revilement that ensued and that still continues in certain areas, the struggles that took place in state legislative halls throughout the nation and that still reverberate—all these happenings were social, organizational, and political in origin. As a result the break between osteopathy and medicine was sharp; their separateness became complete. "Medicine," meaning the American Medical Association and its constituent bodies, became medicine in the minds of everyone, including even osteopaths. "Osteopathy" came to mean a completely new healing agency, entirely different from medicine. And never the twain could meet! There was neither understanding nor appreciation of the fact that technologically, scientifically, and philosophically "osteopathy" and "medicine" have their origin in the

same springs; or, to change the figure, that these professions sprang from the same vine. And to continue the figure, organized medicine made every attempt to cut off osteopathy from the vine from which it sprang —the age-old vine of medicine—with the hope that it might wither. But it grew, and it continues to grow thereon.

The dictum of the historian remains true: "The important events in the world are not deliberately brought about; they simply occur." And to this statement there is a corollary: "History is on the side of important events, and men do not dispose of them by fiat." Osteopathy is assured of an opportunity to play out its destined role so long as its leaders keep aware that fundamentally and historically it is a movement for the continual reorientation of medicine and not one for the perpetuation of a party. That it is a "party" itself and that there continues to be need for it as such are because nowhere else in the world exists a body dedicated to such a movement. But as a scientific observer of the osteopathic movement so perfectly expressed it, when osteopathy has become a pervasive part of the continuum of medicine, it will have become medicine.

The American Medical Association, given the full credit it richly deserves for initiating and fostering tremendous advances in medicine during the past half century, is totally unable, because of its 100-year conditioning, to assume the leadership of forward-thinking men in American medicine. These men know that the boons that remedial medicine has conferred upon mankind, aseptic surgery, anesthesia, quinine and related drugs in malaria, digitalis and quinidine in heart disease, insulin in diabetes, chemotherapy and antibiotic therapy—the list can be greatly broadened, great as they are, do not adequately meet the challenges offered by society today to medicine. These men are aware, painfully aware, of a crying need for a new orientation in medicine. The one group conditioned and dedicated for a half century to a new orientation of medicine is the American Osteopathic Association. Amalgamation or absorption does not await this group, so long as the need for it exists and so long as it keeps itself attuned to that need.

ATOMIC MEDICINE—1954

The sensational and sobering publicity accorded the horrible potentialities of atomic and thermonuclear bomb warfare often obscures the remarkable benefits to mankind accruing from peaceful utilization of the large family of radioactive isotopes developed in the wake of atom bomb manufacture. Current and increasing knowledge of atomic power presents simultaneous opportunities for the human race to heal many of its diseases or to commit mass suicide.

Assuming that the first-mentioned opportunity will be selected by most, a resume follows of the more significant current medical uses of radioisotopes. Some of the knowledge of radioactivity and isotopes is old; much is new; and more is accumulating rapidly through research. Only in very recent years have clinically useful quantities of radioactive materials been generally available.

Scientists have identified approximately 1,026 different forms or isotopes of ninety-eight elements, 276 of them stable and occurring in nature, while the remaining 740 are radioactive. The Atomic Energy Commission produces and distributes commercially some 101 radioactive isotopes. Each has a characteristic rate of disintegration or decay, the term "half-life" being applied to the time required for one-half of the atoms to disintegrate. During this process and succeeding half-lives certain isotopes give off radiations useful in diagnosis and therapy. These emanations are spoken of as alpha particles, beta rays, and gamma rays, the latter being similar to x-rays.

The process of decay to stable forms with the characteristic radiations of each isotope consumes a definite time. Most widely used today in diagnosing and treating human ills are the following radioisotopes with the respective half-life of each: gold^{198} (2.7 days), iodine^{131} (8.0 days), phosphorus^{32} (14.3 days), cobalt^{60} (5.3 years), strontium^{90} (19.9 years), and carbon^{14} (5,720 years). Others are being developed and tested but are not yet ready for general use.

The enthusiasm first engendered over radioisotopes as an answer to the problem of irradiation of deeply placed cancers has given way to appreciation of their rapidly increasing value as immensely helpful diagnostic tools. Experience has shown that these agents do not yet cure cancer but provide life-extending palliation in a number of previously inaccessible sites. In the latter category may be noted the use of iodine^{131} in thyroid carcinoma, particularly its metastatic invasions; infusion of colloidal gold^{198} in ovarian and prostatic cancer and malignant pleural effusions; and the application of phosphorus^{32} in polycythemia rubra vera and certain chronic leukemias. The millions of radioactive atoms per dose provide enormous "point sources" of ionizing radiations applied directly to affected tissues. Cobalt,^{60} an immensely powerful and relatively inexpensive source of gamma rays for external irradiation, is today well known by the lay public. Strontium^{90} beta-ray applications are being employed in numerous institutions in treating small surface lesions of the eye.

Diagnostic use of radioactive isotopes is best exemplified by iodine^{131} in evaluating hyperthyroidism or hypothyroidism in the presence of diseases masking or mimicking thyroid dysfunction. Iodine^{131} is the treatment of choice for hyperthyroidism in many large medical centers throughout the country.

Space limitations forbid all but mention of the tremendously expanding use of radioisotopes as tagged atoms in a variety of diagnostic tests in human beings, for example, studies of metabolism and determination of plasma volume, actions of carcinogens, and fluid balance. This method allows determinations as much as a million million times more sensitive than any chemical tests.

The greatest single deterrent to wider general clinical application of these valuable agents is the lack

of trained personnel. Because of the dangers inherent in their powerful radiations, the use of isotopes is permitted only by persons specially trained in handling and licensed by the Atomic Energy Commission. Training facilities are most inadequate, and a major problem today is the training of greater numbers of physicians to utilize these immensely valuable contributions toward more effective understanding, diagnosis, and treatment of human ills. Man's existence is inexorably bound to the future disposition of expanding atomic knowledge.

L. Raymond Hall, D.O.
Coordinator of Cancer Teaching

"FIFTY THOUSAND OR MORE FOR FIFTY-FOUR"

Research and student loan are the two projects to which the twenty-fourth annual Christmas seal campaign is dedicated. The Student Loan Fund needs no introduction to doctors of osteopathy. They know that there are junior and senior students who need help to complete their training; there are seventy-three of them in our colleges this year who have loans from the Fund.

Research will receive 50 per cent of the profits from the Seal campaign this year. The A.O.A. Bureau of Research reported in July, 1954, that applications had been received for clinical and biologic research grants in the amount of $102,573 and that grants totaling $64,023 were approved. Many osteopathic physicians do not know that the quality of the profession's research programs now is such as to attract aid from outside the profession—additional evidence of growing recognition of both our educational and research projects. But this is not a time when the profession can let down on its own loyal support.

This is the sixth year of the expanded campaign, that is, a campaign directed toward securing funds for both research and student loan. The technics developed over that period paid off last year in such a way that the President of the A.O.A. was able to say, "The potential of the Christmas seal campaign staggers the imagination," and this in spite of the fact that 73 per cent of the profession *failed* to contribute to the drive and 97 per cent did not order seals sent to patients.

Again this year each member of the House of Delegates pledged himself to distribute seals to at least 50 laymen. Seal committees have been set up within divisional societies. The national Auxiliary is putting on an aggressive campaign of its own.

As readers glance over these facts 9,500,000 seals will be in circulation. More than half of this total must reach the general public—how? Through the efforts of doctors and the wives of doctors.

If you have not received Christmas Seals or should you need additional packets write The Osteopathic Foundation, 212 East Ohio St., Chicago 11, Illinois, and they will be sent you forthwith.

GEORGE WASHINGTON RILEY—1866-1954

"There were giants in the earth in those days."

Occasionally, not too rarely, a man arises who by his intent, his interest, his efforts, his training, his environment, and his native ability becomes a leader in his field of endeavor. When that field of action is an area of human service, his fellows elevate him by giving him increased responsibility and authority, literally requiring him to give freely of his talents to the promotion of the usefulness of those who labor with him.

Such a leader was George Washington Riley. Until his recent retirement he carried on a heavy practice in New York City. People of all walks of life were his patients, but his practice ran heavily to those who were themselves outstanding—in business, in industry, in finance, in the professions, and in the theater.

He was one of those physicians whose first thought was the good of his patients. But he early saw that good service to patients involved another area, that of helping, by way of organized effort, to improve the service which he and his fellows could provide. His interests ran to the improvement of the organizational efforts of the profession, in New York City, in the state of New York, in the nation, and in the world.

In the November Forum are catalogued the official positions which Dr. Riley filled, and he filled them superbly. Let it be recorded here that he held the Distinguished Service Certificate of the American Osteopathic Association, which he served as its twenty-second president. Such honors are not lightly accorded.

Those who knew George Riley, even a little, think of him first as a great humanist. He was a strong man, a man of sincere and deep convictions, a devout and practicing Christian. Withal he was, in the strongest sense of the word, a polite man. He was tolerant of weakness in others but never of error or evil. He spoke with force. His sincerity was so obvious as to be taken for granted. He helped others quietly, without ostentation, and without credit-claiming. He gave of himself to his patient responsibilities, to his church, and to his Alma Mater.

He spoke up for osteopathy, through its early days of tribulation and to his dying day. Osteopathic schools and hospitals profited from both his helpful influence and his financial aid.

He was, philosophically, a disciple of Andrew Taylor Still. He saw man and treated him as a whole man, not as just a jumble of loosely associated clinical symptoms.

George Riley would have "succeeded" in many different types of endeavor. People believed him and profited thereby. How fortunate for osteopathy that it should have had the benefit of the interested and devoted service of one born at the right time to do a lasting service for his fellowmen.

And how he enjoyed the life he lived!

R. C. McCaughan, D.O.

Notes and Comments

Much material of interest to osteopathic physicians generally was presented at the first annual assembly of the American Osteopathic Academy of Physical Medicine and Rehabilitation at the College of Osteopathic Physicians and Surgeons, Los Angeles, during the early summer. This newest of osteopathic groups was recently organized for the purpose of increasing knowledge in all fields of osteopathic medicine and providing special training in the field of physical medicine and rehabilitation. The group has a membership enrollment of approximately sixty doctors in eight states. A personal communication from an osteopathic physician (faculty member of one of our colleges) reports on the program.

★ ★ ★

Elizabeth Austin, M.D., a physiatrist and director, Department of Physical Medicine and Rehabilitation, Los Angeles County Hospital, speaking on "The Physical Medicine Prescription," advised that expensive equipment is unnecessary to the doctor's armamentarium, that an investment of $600 should provide the essentials, including a faradic and galvanic machine. Moist hot packs, exercises, and electrical stimulation were emphasized as important rehabilitation procedures. Qualified physical therapists are essential to any program.

★ ★ ★

Painful shoulders are most annoying to the victim during the night. Dr. Austin finds elevation of the foot of the bed helpful in making the patient more comfortable. . . . She also advised that the doctor be precise in prescribing physical medicine procedure to patients. If hot packs are to be applied, the patient must be taught how they should be applied and the length of time and the number of times they should be employed. Prescriptions for exercises should state the number of times to be performed and how frequently.

★ ★ ★

Ultrasonic therapy was reported by Dr. John M. Andrews, executive director, Department of Physical Medicine and Rehabilitation, COPS, as useful in bursitis, in chronic (but not acute) arthritic conditions, and over the sciatic nerve in sciatica. He has found an articulator not only is particularly useful in disorders of the intervertebral disk, but that it actually improves the condition of the disks.

★ ★ ★

Passive movement should be instituted early in the treatment of hemiplegics—meaning as soon as the acute episode is past, possibly within a day or 2 following the thrombus formation—according to W. W. W. Pritchard, Coordinator of Osteopathic Training and Research, COPS. Incidentally, osteopathic physicians everywhere should know much more about the distinctive contribution to osteopathic medicine which is being made by COPS under Dr. Pritchard's direction, and they should also read the lead article in the June, 1954, Journal entitled "The Need for Research in Physical Medicine," by Philip J. Rasch, M.A., C.T., if it has not already come to their attention.

★ ★ ★

Our observer visited the Billig Clinic for Rehabilitation, Los Angeles, where she saw many interesting types of rehabilitative treatment under way. A case of tic douloureux of 10 years' standing that had been handled in the classic manner, including injection of branches of the fifth nerve, without effective results. After 3 months of a regimen of fascial stretching, medication, and diet, the patient had been symptom free for 6 weeks for the first time in 10 years. The rationale of the treatment lay in the diagnosis that the tic was caused by an irritation to the sympathetic autonomic chain by abnormal fascial and perhaps ligamentous tension. Physicians in charge at the Billig institution contend that adequate consideration has not been given to the widespread distribution of elastic connective tissue in the body, to the part which the connective tissues play in the production of pain, or to the fact that certain individuals develop abnormally tight fascia.

★ ★ ★

The role of preventive medicine is considered important in industrial plants, especially where heavy physical work is being done, and there are many individuals liable to back strain and fascial tensions. Preventive measures are similar to those outlined in the treatment followed in the case of tic douloureux. The diet consists of low carbohydrate-high protein type foods and medication for adrenal glands directed toward improving the condition of the connective tissue and the maintenance of an improved condition of the individual. Industrial plants following this type of regimen are said to have reduced intervertebral disk cases to the degree that they are no longer a problem.

★ ★ ★

Physicians should know that the Public Health Service has just issued a revision of the booklet "Immunization Information for International Travel" giving the latest facts on immunization needed by travelers going to every part of the world—on this continent the requirements are especially important for Mexico and

Central and South America. The booklet may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., at 20c a copy.

★ ★ ★

Physicians familiar with the work of the Food and Drug Administration, U.S. Department of Health, Education, and Welfare—and many are—have already noted that Charles W. Crawford, Commissioner of Food and Drugs, retired on July 31, 1954. The opportunity which retirement offers for a new kind of rich and productive living is one well earned by Mr. Crawford. He was in government service for more than 37 years and for many years of that period devoted himself to drafting food and drug regulations and standards, coming to the high post of Commissioner in 1951. As citizens of a democracy we have been too prone in the past to accept a dedicated career such as Mr. Crawford's as a matter of course. The appreciation and best wishes of the osteopathic profession are extended to Mr. Crawford. Such service as he rendered is more than ancillary to medicine; the Food and Drug Administration has become a part of the total medical team in America, safeguarding human welfare. And men like Charles W. Crawford have made it so.

The new Commissioner, George P. Larrick, also a career employee of FDA, has come up through the ranks since 1923. He was named Deputy Commissioner in 1951.

★ ★ ★

The *Quarterly Journal of Studies on Alcohol* (Laboratory of Applied Physiology, Yale University) publishes reports of research on alcoholism from all scientific fields and abstracts current literature dealing with every aspect of the problem. Its June 1954 issue abstracts a number of articles from journals of clinical medicine in which alcoholism is viewed essentially as a problem of the physician and of the general hospital. The authors point out that neither can continue to shirk responsibility for care of the alcoholic as the need for medical attention mounts. Society will demand that physicians and medical institutions concern themselves with a problem that essentially is a medical one. Yet the medical profession in general lacks a knowledge of alcoholism and progress in its treatment thus far has developed largely from nonmedical sources, such as Alcoholics Anonymous.

★ ★ ★

Treatment regimens abstracted in the June number follow the same basic pattern but vary in details. While alcoholism is primarily a problem of rehabilitation it must begin with a sobering-up procedure, which usually includes administration of fluids and vitamins and the general restoration of normal physiological function. The treatment of alcoholism is well within the scope of the general practitioner in 90 per cent of alcoholics. Initial treatment includes the administration of adrenal cortex extract, vitamin B complex, and ascorbic acid. Mephenesin is recommended to relieve general tension and tremor, while opiates are contraindicated. Ambulant patients are given Lipo-Adrenal Cortex. Disulfiram may be valuable in selected cases. Sobering procedures include barbiturates for sedation and a gradual withdrawal of alcohol; extremely restless patients should be made to accept their ration of whisky of 1.5 oz. every 2 to 4 hours. If these methods of sedation fail, alcohol should be given intravenously. Patients with delirium tremens who cannot take adrenal steroids must be treated with alcohol intravenously. Other articles report results of treatment with Disulfiram, Pyrahexyl, Compound 2601-A, et cetera.

★ ★ ★

All writers are agreed that the sobering up of the chronic alcoholic is merely a procedure preliminary to beginning a regimen of rehabilitation which is actually the treatment of the disease of chronic alcoholism. Detoxication accomplished, the next step is an investigation into the cause of the particular individual's excessive drinking. Authorities now believe that faulty personality development lies at the root of alcoholism and that psychotherapy, especially group psychotherapy, constitutes the most promising treatment. One writer points out that it is important to extend the psychotherapy to the wife of the patient who is often as sick emotionally as her husband. While fundamental treatment of the alcoholic does lie in the field of psychiatry, there are too few such specialists to undertake the care which the extent of the problem now demands in America. Thus the treatment of alcoholism has become a new field for the general physician and a responsibility of medicine which he can no longer evade. The literature on the treatment of alcoholism is most abundant. Physicians interested in and needing advice on the best way to prepare themselves to care successfully for alcoholics should write directly to the Yale Center of Alcohol Studies, 52 Hillhouse Ave., Yale Station, New Haven, Connecticut.

★ ★ ★

Gamma globulin is now available on doctor's prescription to be used for the prevention of paralytic poliomyelitis, measles, and infectious hepatitis. It affords temporary immunity from measles and reduces the severity of the attack. Gamma globulin is still being confused with polio vaccine which is being tested in America. Gamma globulin is to be used for prophylaxis against paralytic polio for which it provides only temporary immunity. It was much misused during the summer of 1953 when it was frequently employed after the peak of the polio epidemic had passed.

★ ★ ★

The October, 1954, issue of the *Cleveland Clinic Quarterly* reported a case of thromboangiitis obliterans in a brother and sister as support of the belief that heredity plays a role in the susceptibility of the arteries to the disease. The bases of the diagnosis of thromboangiitis in each patient were youth (ages 30 and 33, respectively), both had been heavy smokers for many years, absence of major pulsations in the upper as well as the lower extremities, temperature and color changes, and painful ulcers. Marked improvement in symptoms resulted in each patient when smoking was stopped.

★ ★ ★

In Briefer Form.—Dr. Frances K. Graham of Washington University's neuropsychiatry department, St. Louis, reports an electrical test that might show

whether or not a newborn baby is suffering from brain damage. A weak electrical current is applied to the baby's leg. If the infant has brain damage, stronger shocks are needed to make it move its leg. The test is said to be harmless and seems reliable. . . . At a recent meeting of the American Chemical Society in New York City Dr. Ancel Keyes of the University of Minnesota emphasized to the chemists that it was not so much the number of calories in the diet as it was their source which determined whether an individual was eating his way into heart troubles. Dr. Keyes pointed out that the ingestion of large amounts of dietary fat had a direct relation to the amount of cholesterol in the circulating blood, and its eventual deposition in arterial walls. Obese people tend to eat more fats which may explain their liability to vascular degeneration. . . . At a recent meeting of the American Psychological Association that organization authorized the establishment of the American Board for Psychological Services. The board will certify qualified professional psychologists eligible for listing in the association's national registry. This move will help to curb the quackery that is rapidly developing in the field of psychologic service. . . . Smogs appear to kill because they contain tiny particles of acidic salts that dissolve in the fluid of the respiratory tract and cause an acute irritation of the surrounding tissues, according to a report released by W. C. L. Hemeon of the Mellon Institute of Pittsburgh. The Donora, Pennsylvania, smog of 1948 and the London smog of 1952 (in which more than 4,000 persons died) are the best-known smog incidents. In both cases the killing materials were metallic ammonium sulfates from coal smoke. Previous studies had failed to isolate the lethal factor in smogs that kill. . . . A conference held in Rome during the summer studied population trends in relation to the problem of food supply. It was estimated that as much as two-thirds of the present 2,500,000,000 world population is starving or near to starving. Present population estimates for 1980 run 4,000,000,000. This continuing increase, put in a realizable form, means that "An extra hundred thousand persons turn out for dinner every day." Population and resources are said to constitute the most important problem facing the world. The Secretary General of the United Nations has cautioned that "The world is skating on thin economic ice."

Department of Public Affairs

DONALD M. DONISTHORPE, D.O.
Chairman
Los Angeles

BUREAU OF PUBLIC EDUCATION ON HEALTH

CARL E. MORRISON, D.O.
Chairman
St. Cloud, Minn.

THE AMERICAN LEGION ADOPTS RESOLUTIONS ON PUBLIC HOSPITALS

The subject of public tax-supported governmental hospitals has long been one of interest to members of the osteopathic profession. Hospitals controlled and operated by units of government at the federal, state, and local level number in all 2,136 of the approximate 7,000 hospitals in the United States and provide 1,113,004 of the approximate 1,600,000 hospital beds in the country. The hospitals are operated by the following units of government: federal 392, with 201,000 beds; state 550, with 712,000 beds; county 713, with 116,000 beds; city 396, with 72,000 beds; and city-county, 85, with 13,000 beds. Governmental hospitals may be large or small. Five hundred and eighty-four governmental hospitals have less than 50 beds and another 381 between 50 and 100 beds. Five hundred and ninety-seven of such hospitals, on the other hand, have over 500 beds. The distribution of governmental hospitals in the various states appears to be closely related to the size of the population in the states. The largest number of beds in any state is in New York with 165,000 beds followed by California with 88,000 beds and Illinois with 73,000 beds. Governmental hospitals may be divided into the following general classifications: 1,239 general hospitals with 263,000 beds; 365 nervous and mental hospitals with 729,000 beds; 319 tuberculosis hospitals with 78,000 beds; 89 special disease hospitals with 24,000 beds; and 124 other institutions with 18,417 beds.

The attitude of the American Osteopathic Association regarding public tax-supported hospitals is as follows:

That local public tax-supported governmental hospitals are in the nature of public utilities and should be operated so as to be of maximum benefit to the communities in which they are located. All the people within the areas served by such governmental hospitals should be eligible to be cared for therein and to have the health services of the physician or surgeon of their choice subject to reasonable rules and regulations necessary for the proper administration of the institutions. No rule or regulation of such a local governmental tax-supported hospital which excludes physicians or surgeons of the osteopathic school of medicine solely because of the school of medicine to which they belong and adhere is reasonable or in the public interest. The discrimination and denial which sick or injured patients of physicians or surgeons excluded from such hospitals must suffer are without cause or justification. Governmental hospitals are maintained and supported by the tax payments of all the people and all who contribute to their support should possess equal rights in the use of such public institutions.

There has been an increase in the use of public hospitals by members of the osteopathic profession in recent years and the continued expansion of governmental hospital facilities makes certain the greater use of such institutions by patients of licensed osteopathic physicians in the future.

Another national organization, The American Legion, has recognized the public character of governmental hospitals and the need of their use by all persons in the country. At the Thirty-Sixth Annual National Convention of The American Legion held in Washington, D.C., August 30-September 2, 1954, the Report of the Committee on Rehabilitation was adopted by the Legion delegates. Two of the resolutions which were a part of the Report pertained to hospital privileges. They are as follows:

No. 11 (Colorado), requires vigorous opposition to any legislation which would result in depriving any veteran of any medical or surgical attention or hospitalization now afforded him by virtue of existing statutes.

No. 56 (North Carolina), expresses belief that all public subsidized hospitals should be available to all citizens, who while confined therein as patients should be entitled to receive the services and treatment of the duly licensed physicians of their own choice, irrespective of staff membership; and requires that the American Legion nationally seek enactment of legislation to effectuate the objectives and purpose of this resolution; and asks that each department seek similar legislation in their respective states.

These resolutions thus constitute a further recognition of a problem which has affected the health of the people of this country. Public-subsidized hospitals should be available for the care of all the people who contribute to their support. In a democracy the right to the services of the physician of his choice by a sick or injured person may be illusory if those services can be denied the patient because of the rules or regulations of the public hospitals.

Department of Public Relations

CHESTER D. SWOPE, D.O.
Chairman
Washington, D.C.

INDEPENDENT HEALTH PLANS

The Division of Research and Statistics in the U. S. Department of Health, Education, and Welfare regularly assembles enrollment, financial, and other data about voluntary health insurance in the United States, including (1) commercial accident and health insurance, (2) Blue Cross hospitalization plans, (3) Blue Shield surgical-medical plans, and (4) "independent" plans—plans and arrangements not falling in the three preceding categories. A thorough canvass of the "independent" plans has been made by the Division at about 5-year intervals. Such a survey—the fourth undertaken by the Division—was begun in March, 1954.

The following is extracted from the preliminary report on the 1954 survey:

About 9 million individuals derive some health insurance protection from the 299 plans covered by the 1954 returns through July 30. This enrollment includes 4.5 million subscribers (or employees) and 4.5 million dependents of these members. Unlike other forms of health insurance, slightly fewer dependents than subscribers are covered, due to the fact that only employees are eligible for prepaid benefits in 40 percent of these plans . . .

At least half of the enrollment is found in industrial plans, while about a third of the total enrollment for hospitalization, surgical, medical and diagnostic benefits is derived from self-insuring union plans.

Since many of the plans were developed to suit the needs of their particular membership, they represent several hundred different solutions to providing security against sickness. While this fact complicates many of the statistical analyses contemplated for the final report, it means that the information collected in the survey offers a unique reservoir of information about going experiments in varied methods of providing health insurance, whether of limited or comprehensive scope. Some of the plans offering comprehensive service benefits for medical care use community doctors, some use panels of doctors, some have group practice clinics and some even have their own hospitals. Some plans are completely prepaid while others have various "deductible" and "coinsurance" features. Among cash indemnity plans, some provide medical care from the first visit to the doctor's office while others pay benefits only after a second or third visit. The variations are endless. It is perhaps of significance that in this group of plans (which are by and large consumer-sponsored) 69 percent of the enrollment is eligible for service benefits (for some or all benefits covered by the plan), and that preventive, diagnostic and dental benefits are provided to so many persons on a prepaid basis. A total of 134 plans, covering 2.9 million people, provide benefits through some form of the group practice of medicine . . .

Analysis of the plans in the 1954 survey and of changes occurring since 1949 shows that the greatest area of growth in "independent" plans has been in the number of union plans and in their membership. From 18 plans with an enrollment of less than half a million in 1949, there were 76 union plans with a membership of 2.8 million by the end of 1953. There are four major areas, in addition to the growth of union-sponsored plans, which have developed in the past 5 years and which seem likely to develop still further in the future. These are:

1. Extension of coverage—to dependents where they have not been covered, and to retired workers and to their dependents.

2. Substitution of some form of other benefits which supplement the hospitalization, surgical and in-hospital medical care benefits of the standard group insurance coverage provided. When a collectively bargained or employer-sponsored insurance contract has superseded the employee mutual benefit plan, the latter may continue to operate by providing benefits that complement the insurance provisions—such as (1) home and office and diagnostic benefits, (2) major medical expense indemnity, and (3) payment of the difference between the cash indemnity insurance benefit of the employer-financed plan and the actual cost of the services to the insured.

3. Provision for diagnostic services. Since most health insurance comes into play only after a diagnosis has been made, many of the newly formed union plans are filling this gap with plans designed to provide prepaid diagnostic services through out-patient clinics. The dividing line between diagnostic and treatment services is frequently invisible, and it is the intent of many of these plans, if not already dong so, to include out-patient medical care and preventive services among their prepaid benefits. The establishment of the diagnostic clinic thus represents a concerted effort to close the gaps in protection now existing in the prevailing forms of benefits.

4. Joint action by a number of small unions to develop a large enough group to support a medical center and/or an insurance program of their own.

Current Literature

THE TREATMENT OF STATUS ASTHMATICUS

Many simultaneous approaches are necessary in the treatment of asthma, but treatment should be directed toward the patient as a whole and not only toward the asthma. Environmental control, measures for symptom and relief, and control of complications of asthma are discussed by Haddon M. Carryer *et al.*, in *The Medical Clinics of North America*, July, 1954.

The objective of environmental control of asthma is to remove the patient from factors which aggravate the asthma and permit measures likely to relieve severe asthma. Hospitalization is desirable, particularly for the patient seriously ill with status asthmaticus, in order that allergens and respiratory irritants can be eliminated as much as possible. Control of humidity and temperature which is usual in hospitals is favorable to the bronchitis manifested by asthmatic patients. In addition, certain treatment procedures are performed more easily in the hospital.

Measures for symptomatic relief include the use of bronchodilators, gas inhalation therapy, adequate hydration, expectorants, sedation, and administration of cortisone and corticotropin.

Epinephrine is the most effective bronchodilator, and, as a general rule, the authors use it in a 1 to 1,000 aqueous solution, giving from 0.25 to 0.33 cc. of the solution hypodermically every 20 minutes for several consecutive injections to resolve severe status asthmaticus. In aged patients and those with vascular disease and hypertension, the dosage of epinephrine should be smaller and the injections less frequent. The authors recommend teaching self-administration of epinephrine to those who probably will require its injection over a prolonged time. They also advocate instructing the patient in prompt inhalation of a nebulized bronchodilator when an attack occurs. Ephedrine and ephedrine-like drugs and xanthine derivatives are also valuable as bronchodilators in asthma.

Oxygen or oxygen diluted with helium is used for asthmatic patients. Carbon dioxide is also used and is particularly valuable for asthmatic patients who have recently had upper abdominal operations.

Hydration is of the utmost importance to the seriously ill asthmatic patient; intravenous therapy is started as soon as the patient is admitted to the hospital. Usually fluids consisting of 5 per cent dextrose in water are administered continuously at a rate of 2 to 4 minims per second until 2 to 3 liters have been administered. As improvement takes place, intravenous fluids are administered twice a day. In the presence of congestive heart failure in asthmatic patients, hydration may well be less energetic until an appraisal of the patient's cardiovascular reserve has been made.

Expectorants are of limited value until hydration has been effected. An inorganic iodide salt is the most effective expectorant. The authors suggest 5 to 10 grains (0.3 to 0.65 gram) of potassium iodide three times a day as long as sticky secretions are being raised. Since the empty upper digestive tract does not tolerate iodides very well, they should be taken after meals and after liberal dilution with water.

Sedatives which do not suppress the respiratory center should be chosen. Small doses of phenobarbital are useful, or for patients stimulated by barbiturates, chloral hydrate.

Asthma is controlled rapidly and effectively with cortisone and corticotropin, but control is lost after a few days or weeks when the hormones are discontinued. These preparations are extremely valuable for the critically ill patient when there is not time to assess the influence of more conservative therapy.

Bronchitis, bronchostenosis, pulmonary emphysema, and any other complications of asthma must, of course, be treated. After the acute phase of asthma has subsided, the basic cause must be determined and treated.

ESSAY ON THE BALLISTOCARDIOGRAM

Various aspects of ballistocardiograms are discussed by Isaac Starr, M.D., in an unusual and interesting article appearing in *The Journal of the American Medical Association*, August 14, 1954.

The purpose of the article, which is an essay rather than the usual type of scientific publication, is to acquaint physicians with the main features of ballistocardiography and to emphasize the difficulties in this rapidly growing field, its background, and its future hopes and possibilities.

There is first a discussion of the history of the ballistocardiogram which, incidentally, goes farther back than most physicians realize. Following the history, instruments used in ballistocardiography, old as well as new, are described. Typical records are discussed and illustrated, and important sources of error are stressed. Artefacts are common and may result from such insignificant circumstances as a passing trolley many floors below or from movement of the building. Interpretation of the ballistocardiogram and the significance of the various waves are considered.

Numerous theories of approach to ballistocardiography and attempts to calculate the true forces originating the ballistocardiograms are mentioned. The experimental approach to the technic is also discussed. Ballistocardiograms secured in the clinic are studied empirically. The author has regularly followed many patients, and the results of long-term studies are considered. The final section of the essay is devoted to a discussion of the utility of the ballistocardiogram.

DEVELOPMENTAL DEFORMITIES OF THE LOWER EXTREMITIES

Although intrauterine position has for some time been considered a cause of deformities in the newborn, the possibility of certain sitting and sleeping habits of infants and children being factors in the production of developmental deformities of the legs is a relatively new concept. The importance of these habits is emphasized by Robert A. Knight, M.D., in *The Journal of Bone and Joint Surgery*, June, 1954.

Medial tibial torsion of 5 to 30 degrees, mild bowleg involving the tibia and femur, and knee-flexion and hip-flexion attitudes exist in most newborns. Usually these deformities correct spontaneously although there is no way of predicting in which cases this will occur.

Sleeping in the knee-chest position, which is encouraged by the majority of physicians and parents, frequently results in adoption by the child as a reverse tailor position while sitting. He sits between his flexed extremities with his feet everted or inverted beneath his buttocks. Formerly this posture was seen most frequently in little girls while playing with their dolls or while playing jacks, but at present it is the common position adopted by both boys and girls as they watch television.

Sleeping on the back may cause development or aggravation of rotational deformities because of the spread-eagle or frog-leg position which is assumed and further encouraged by pressure of the diaper.

In itself a bulky diaper worn constantly may be a factor in causing a deformity. Hip-flexion and knee-flexion attitudes, the prone sleeping posture, and bowlegs are encouraged by bulky diapers.

A mother carrying a child astride her hips while his legs cling to her and she grasps him about the waist encourages bowleg, medial tibial torsion, and varus deformity of the fore part of the foot if the position is maintained for long periods.

The walker used by many children may be a factor causing twists and lateral deformities. The flexion-abduction attitude of the hip may be produced by canvas swings or jumpers and encouraged by the bulky diaper.

In a study of the sleeping habits of 246 children in relation to foot alignment, it was found that deviations occurred in 84 per cent of children who slept in the knee-chest position. About 60 per cent of the back sleepers, 50 per cent of those who slept on their stomachs with the legs straight, and 17 per cent of those who slept on their sides had deviations.

The author believes a child should be placed on alternate sides for sleeping and on his back or stomach while he is awake. In addition, he should not be permitted to maintain one position for too long or to allow vicious postures to develop. Depending on the type and severity of the deformity and the child's age, if conservative measures are not sufficient, splints, braces, special shoes, or surgical correction may be necessary.

OTO-NEURO-OPHTHALMOLOGIC MANIFESTATIONS OF CERVICAL ORIGIN (POSTERIOR CERVICAL SYMPATHETIC SYNDROME OF BARRE-LIEOU)

That the primary lesion in headache may lie in the posterior cervical sympathetic system is often overlooked in searching for the cause of headache. A description of the posterior cervical sympathetic syndrome and its management is given by Louis Gayral, M.D., and Eugene Neuwirth, M.D., in the *New York State Journal of Medicine*, July 1, 1954.

The posterior cervical sympathetic syndrome, which is also known as the Barré-Lieou syndrome, is often incorrectly diagnosed because of its variety of signs and symptoms.

The primary signs and symptoms of the posterior cervical syndrome are the appearance of pain in the head, face, or back of the neck; vasomotor disturbances of the face, ears, and oropharynx; tinnitus and diminished hearing which are relieved by sudden short attacks of vertigo; asthenia; insomnia; and photophobia. There is a decrease of retinal arterial pressure, and there may be ocular lesions and paroxysms of orbital pain.

The syndrome is diagnosed after the history is taken carefully, physical examination performed, the cervical segment of the vertebral column explored roentgenologically, and routine laboratory studies and any special laboratory studies which may be necessary are made.

The posterior cervical syndrome must be differentiated from trigeminal, glossopharyngeal, and occipital neuralgia, from the pain of temporal arteritis, from migraine, tension headache, neurasthenia, and neurosis.

THE RADICAL BREAST OPERATION

Because he believed the greatest obstacle in mastectomy for breast cancer was adherence to the standard Halsted-Willy Meyer operation, Herbert C. Chase, M.D., with the help of his associates, developed an operation for breast removal based on five definite concepts. This procedure, which he considers more extensive, complete, systematized, and precise than the method usually employed, is described by him in *Surgery, Gynecology and Obstetrics*, July, 1954.

The original basic concept of Halsted and Willy Meyer has not been changed, but four additional concepts have been added. The dissection is begun in the axilla and extends downward to include the nodes, muscles, fascia, and breast en masse and in continuity. The second and third concepts were added by Sampson Handley more than 30 years ago: the area of skin and fascial removal is wide, and the epigastric nodes are removed. The author has added two concepts to these others and has included them in the operations he has performed since 1924: the eight pathways of spread to the axillary, thoracic, and abdominal lymph basins and the 5 groups of nodes are removed, and an antiseptic technic is used to prevent local implantation and spread from the site of biopsy and from involved nodes or infiltrated areas.

The pathways and nodes are counted after removal and the location of involved nodes and the extent of involvement are recorded. There procedures have proved to be of great value in determining prognosis and postoperative therapy.

Antiseptic technic is used throughout the course of the radical dissection. Pads are used which are saturated in antiseptic solution; gowns, gloves, and instruments are changed after biopsy; and a gauze sponge saturated in antiseptic solution is sutured in the biopsy site. The author believes that strict adherence to this antiseptic technic is one of the reasons the rate of local recurrence has been reduced to less than 4 per cent.

The operative technic based on the five concepts is thoroughly described and illustrated.

ABDOMINAL WOUND DISRUPTION

In analyzing the cause of wound disruption following abdominal operations, F. J. Tweedie, M.D., and R. C. Long, M.D., F.A.C.S., made a study of 22,311 major abdominal operations which were performed at the Royal Victoria Hospital between 1941 and 1952. They have reported the results of their study in *Surgery, Gynecology and Obstetrics*, July, 1954.

A total of 113 wound disruptions occurred in this series, an incidence of 0.51 per cent. The incidence on the general surgical service in 15,711 operative procedures was 0.47 per cent, and in the obstetric and gynecologic services it was 0.59 per cent in 6,600 operations (1,434 cesarean operations, 0.14 per cent and 5,166 gynecologic operations, 0.71 per cent). Wound disruption occurred 2.6 times more frequently in males than in females, but on the general surgical service alone the ratio was 6.7 to 1.

In comparing the incidence of disruption to the type of incision it was found that wound disruption was more frequent in upper abdominal incisions (0.94 per cent) than in lower abdominal incisions (0.54 per cent). McBurney incisions were not included in the statistics since none disrupted.

There did not appear to be any relation between the type of suture material used and wound disruption, and the authors were unable to make any definite conclusions as to the value of tension sutures as a prophylactic measure.

Associated conditions, in the form of coughing, vomiting, and distention, which resulted in increased abdominal wall tension occurred in 75 per cent of the patients with wound disruption. These conditions and others occurring in the postoperative period are believed to be major factors in wound disruption. Advanced age, poor nutrition, anemia, and drainage through the wound are also believed to be significant factors. Infection of the wound is not considered an important factor since the incidence of disruption has not decreased with the use of antibiotics.

Late incisional hernia occurred in 11 patients following wound disruption (9.7 per cent.) Death occurred in 17 patients (15 per cent) after wound disruption; however, in most cases, wound disruption was only one of several factors contributing to the patient's death.

Book Notices

FUNDAMENTALS OF INTERNAL MEDICINE. By Wallace Mason Yater, A.B., M.D., M.S. (in med.), F.A.C.P., Director, Yater Clinic, Washington, D.C; Formerly Professor of Medicine and Director of the Department of Medicine, Georgetown University School of Medicine; Physician-in-Chief, Georgetown University Hospital; Physician-in-Chief, Gallinger Municipal Hospital, Washington, D.C., and Fellow in Medicine, Mayo Foundation, Rochester, Minnesota. Ed. 4. Cloth. Pp. 1276, with illustrations. Price $13.50. Appleton-Century-Crofts, 35 W. 32nd St., New York 1, 1954.

The original purpose of the book is maintained in this fourth edition: the presentation in one volume of the essentials of medical practice—exclusive of obstetrics, surgery, and the limited specialties—in order that the busy practitioner and student may save reading time. Clarity is achieved through the elimination of unnecessary material and by the use of bold-face type to indicate subdivisions and various aspects of the many subjects. The author, who was assisted in the preparation of this edition by his former student and assistant, Dr. William F. Oliver, realizes that this book will not always fill the needs of either student or practitioner. Hence, lists of recommended texts are included at the end of each chapter.

New material includes information on ganglionic-blocking agents, ACTH and cortisone, recently described diseases such as cat scratch fever and acute hemorrhagic fever, and altered concepts of some diseases. The practical chapter entitled Clinical Values and Useful Tables has been retained from the earlier editions.

PROBLEMS IN THE ANATOMY OF THE PELVIS. An Atlas. By Eduard Uhlenhuth, Ph.D., Professor of Anatomy, University of Maryland, School of Medicine. Cloth. Pp. 206, with illustrations. Price $10.00. J. B. Lippincott Company, East Washington Sq., Philadelphia 5, 1953.

This new and important work was designed to help in formulating definite ideas of the anatomic nature of the pelvis and its contents. It skillfully illustrates the interrelationships of the pelvic organs with clear lucid text and finely detailed plates.

The volume is composed of three main topics. The Retrovesical Space in the Male was selected because of its great importance in pelvic surgery. The Vesical Trigone and the Urinary Sphincters and The Layering of the Levator Ani were selected because the author felt that no general consensus yet existed concerning certain of their anatomic details. In the section, "Explanation of Plates," the illustrations are excellent; however, the identifications attached to the plates seem somewhat more complex than necessary.

While this atlas is not a complete account of pelvic anatomy, it should be welcomed by those who wish to become acquainted with the anatomy of the pelvic cavity by actual dissection. Ever since the author became interested in this subject, he has felt that the lack of a collection of suitable illustrations has handicapped teaching and studying of this region. He proposes that good illustrations may produce surprising interest on the part of students in minutely detailed dissection. Therefore, this volume is intended as a guide for postgraduate students and hospital house staffs needing discussion and specialized knowledge of the pelvic area.

A TEXTBOOK OF CLINICAL NEUROLOGY With an Introduction to the History of Neurology. By Israel S. Wechsler, M.D., Clinical Professor of Neurology, Columbia University, New York; Consulting Neurologist, The Mount Sinai Hospital, Montefiore Hospital and Rockland State Hospital, New York. Ed. 7. Cloth. Pp. 801, with illustrations. Price $9.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1952.

The general plan of organization of the seventh edition of this widely used textbook is much the same as that of its previous edition; however, so thorough has been its revision that in many ways the text is quite new. Close reading will reveal much editing and modernization of the subject material, presented in a comprehensive manner.

The treatment of the meningitides, especially tuberculous meningitis, as well as other infections of the nervous system has been completely revised. A thoroughly modernized treat-

ment of neurosyphilis and classification of the encephalitides has been included. It is interesting to note that electromyography and double simultaneous stimulation are newly incorporated. Dr. Wechsler has critically reviewed the chapter, The Neuroses, redefined certain concepts, and eliminated old ones. A number of new illustrations have been introduced and the bibliographies at the end of the various chapters have been appropriately revised in accordance with the text material.

In total, Dr. Wechsler seems to have succeeded not only in improving his text by incorporation of what is new and valuable, but also in correcting errors and eliminating all that appears obsolete in the light of present knowledge.

SURGICAL FORUM. Proceedings of the Forum Sessions, Thirty-Ninth Clinical Congress of The American College of Surgeons, Chicago, Illinois, October, 1953. Cloth. Pp. 752, with illustrations. Price $10.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1954.

An outstanding group of scientific contributions to surgical knowledge have been compiled in this 1953 Surgical Forum volume. The 138 papers incorporated into this volume, a reference book of eminent value, represent the increasing activity in the field of surgical research and endeavor. These articles embody the results of a wider and more rapid extension of surgical knowledge and the application of this knowledge to the problems of surgical disease.

Nearly 390 researchers have contributed to the volume, and the majority of their papers follow this outline: materials and methods, results, discussion, summary, and references. The subjects covered include research on the heart and great vessels; blood vessels and circulation; lungs; esophagus, stomach, and intestine; liver and pancreas; burns and renal function; shock, nutrition, and electrolytes; wounds, infections and antibiotics, and anesthesia; cancer and steroids; and plasma expanders.

Although there are a few obvious typographical errors, the book on the whole presents easy reading and is amply illustrated with photographs, drawings, and tables.

It would seem necessary for every surgeon to own and study this volume in order to keep abreast of modern surgical achievement, and in order to translate into his own work the broadest aspects of the advances made possible by the researches reported in this excellent work.

THE CATHOLIC DOCTOR. By Fr. A. Bonnar, O.F.M., D.D., M.Sc. Fifth (revised) edition. Cloth. Pp. 179. P. J. Kenedy & Sons, 12 Barclay St., New York 8, N.Y., 1950.

Catholicism in a way not true of other religious faiths is peculiarly a way of life. Such a book as this (its author is an eminent British Catholic theologian), is ample evidence to this Protestant-nurtured reviewer that the opening statement of this review cannot be applied to Protestantism. And that does not gainsay the fact that there are individual Protestants (references are to the laymen of both sectors of Christendom, not to the religious) for whom their faith and belief and its practice is a dedicated and devoted approach to living.

The purpose of the manual (now in its fifth edition) as stated by its author in the preface to the first edition (1937) is "to provide Catholic doctors with a compendious and readable exposition of the teachings of the Church on medico-moral questions. . . ."

Our readers may conclude that the book is of interest only to doctors of the Roman Catholic persuasion. Not at all. Its contents deal primarily with the Christian moral code as it affects professional practitioners and the lay public. Since the Christian code is Hebraic-Christian in origin there are no doctors of western civilization who will not find this survey of the field of medical ethics interesting and challenging.

It is true that the practices recommended to be followed are the teachings of the Roman church in such areas as sex, marriage, birth control, euthanasia and sterilization, sexual aberration, psychotherapy, and related fields. There are chapters on "The Doctor in His Practice" and on "Pain and Suffering"—both of them in the highest traditions of medicine.

Differences of opinion on recommended practices in medico-moral questions would be found among all readers; the differences would be most sharply drawn between Catholics and Protestants. But the wise doctor, regardless of his particular faith, will recognize these differences as quite secondary. He will view without reservation so fine and forthright a presentation of the obligations, responsibilities, and privileges of a physician and rejoice that these have been written down without equivocation. There can be no physician, hospital administrator, or nurse that would not find his vocation richer for a thoughtful reading of this text.

GERIATRIC MEDICINE: Medical Care of Later Maturity. Edited by Edward J. Stieglitz, M.S., M.D., F.A.C.P., Consulting Internist, Suburban Hospital, Bethesda, Maryland and Washington Home for Incurables; Chairman of Staff, 1945-1947, Suburban Hospital, Bethesda, Maryland, St. Elizabeths Hospital and Veterans Administration; Associate, Washington School of Psychiatry; Lecturer in Industrial Medicine, New York University-Bellevue Post-Graduate Medical School; Chairman, Advisory Council on Professional Education, Commission on Chronic Illness; Consulting Editor, Geriatrics; Formerly Associate Clinical Professor of Medicine, Rush Medical College, University of Chicago; Washington, D.C. Ed. 3. Cloth. Pp. 718, with figures. Price $15.00. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1954.

The continually increasing number of texts, articles, and symposia concerned with geriatric medicine proves that physicians are conscious of the expanding significance of this field to both general practitioners and specialists. The necessity for emphasizing geriatric medicine is apparent when one considers that it is estimated that in 1980 over 14 per cent of the United States' population will be 65 or older. With this fact in mind, the value of an authoritative geriatrics text is realized.

The nature of the specialty directed the creation of this book. However, geriatrics is not a specialty in the strict sense, for it applies an appreciation of the changes which come with senescence to all the aspects of medical practice. Hence, the many authors' contributions are classified into certain basic considerations, disorders of metabolism, and disorders of various special systems of the body.

Of interest from an osteopathic viewpoint is the emphasis upon the guidance and care of normal aging people and the prevention or early correction of disorders. The editor, Edward J. Stieglitz, holds that the prevention of premature senile infirmity can enable the aging to maintain vigorous and useful lives. The benefits of such an achievement to the aging individual, his family, and the economy of the country are manifold.

Two new chapters dealing with geriatric nursing and mental hygiene in later maturity further enlarge the scope of a book already broad in usefulness.

COMMUNICABLE DISEASE CONTROL. A volume for the Health Officer and Public Health Nurse. Third edition. By Gaylord W. Anderson, M.D., Dr. P.H., Mayo professor and Director, School of Public Health, University of Minnesota; Formerly Director, Medical Intelligence Division, Office of the Surgeon General, War Department; Formerly Deputy Commissioner and Director of the Division of Communicable Diseases, Massachusetts Department of Public Health, and Margaret G. Arnstein, R.N., M.P.H., Sc.D. (Hon.), Chief, Division of Nursing Resources, United States Public Health Service; Formerly Consultant in Communicable Disease Division, New York State Department of Health; Formerly Associate Professor of Preventive Medicine and Public Health and Director of the Course in Public Health Nursing University of Minnesota. Ed 3. Cloth. Pp. 500. Price $6.50. The Macmillan Company, 60 Fifth Ave., New York, 1953.

In spite of the fact that communicable diseases are now responsible for less than 7 per cent of deaths in the United

States, one cannot conclude that all communicable diseases have been permanently brought under control. Though the problem of communicable disease can no longer be the basis for the health department program, nevertheless poliomyelitis, rheumatic fever, and encephalitis are still uncontrolled; tuberculosis is, even now, far too common; and diphtheria and whooping cough continue to take their tolls.

Recognizing that the communicable diseases have declined in importance as a public health problem, the authors in this third edition have found it necessary to change the perspective of the book accordingly. However, like the previous editions, the book continues to emphasize protection of the population as a whole rather than of the individuals comprising the community. The first part once again treats of communicable diseases in general, and the second part considers the prevention and control of specific diseases.

Three new chapters, which deal with the control of communicable diseases in the school, Q fever, and hepatitis, are included. The authors have carefully studied control procedures and have eliminated those which are of no demonstrable value, the goal being the elimination of unnecessary expenditure.

FLUID AND ELECTROLYTE THERAPY. By Franklin L. Ashley, B.S., M.S., M.D., Assistant Professor of Surgery, University of California Medical Center, Los Angeles, and Horace G. Love, B.S., M.D., Dallas, Texas. Cloth. Pp. 72. Price $3.00. J. B. Lippincott Company, East Washington Square, Philadelphia 5, 1954.

A knowledge of the role that fluid balance plays in maintaining normal functions of the vital organs of the body is basic to the proper treatment of all disease conditions. It is equally important that the significance of abnormal variations of water exchange be known as they concern the healthy patient undergoing elective surgery (subjected to a general anesthetic) or as they affect the traumatized individual.

The chemistry and physiology involved in the maintenance of a stable fluid balance and the function of the kidneys in maintaining electroneutrality may seem a complex theoretical problem to the average physician—even today's medical students, interns, and house officers may be at a loss when pressed for an understanding of the role of fluid therapy. The fundamental principles simply and lucidly presented are to be found in this primer of little more than fifty pages to be read at a sitting. And it should be invaluable to the older doctor who simply does not know that comprehension of these elementary facts is fundamental to the treatment of most illness. This little text is an essential part of every doctor's library.

PATHOLOGY. Edited by W. A. D. Anderson, M.A., M.D., F.A.C.P.; Professor of Pathology and Chairman of the Department of Pathology, University of Miami School of Medicine; Director of the Pathology Laboratories, Jackson Memorial Hospital, Miami, Florida; Formerly Professor of Pathology, Marquette University School of Medicine, Milwaukee. Ed. 2. Cloth. Pp. 1393, with illustrations. Price $16.00. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1953.

The popularity of this text is indicated by the fact that it has had three printings and one revision since it was published in 1948. A single volume text on pathology, it is the work of thirty-two collaborators whose contributions have been editorially supervised by Dr. Anderson. A logical and effective order of presentation is followed, one that makes the volume useful for both undergraduate study and reference work. Subjects of lesser and primary importance are indicated by the use of smaller and larger type sizes.

Believing that the effects of radiation, tropical diseases, and diseases of the skin are inadequately treated in many pathology texts, the editor has chosen to put notable emphasis on these conditions. Emphasized as well are the nervous system, the special sense organs, and the skeletal system. The number of illustrations included is most helpful, as are the ten color plates.

The bringing up to date and revision of almost all parts of the book have assured its continuing usefulness.

A HANDBOOK FOR DISSECTORS. By J. C. Boileau Grant, Professor and Director of the Department of Anatomy, University of Toronto, and H. A. Cates, Professor of Anatomy, University of Toronto. Ed. 4. Cloth. Pp. 425, with illustrations. Price $3.50. The Williams & Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2, 1953.

Actually, this little volume might be termed a sixth rather than a fourth edition, since it was produced twice in mimeographed form before being published as a book. The authors clearly state that they have written only a guide to proper dissection and not an anatomy text. Both the well-tried procedures and the carefully written "general remarks" insure the book's continuing usefulness. Of help, as well, are the introductory pages and the index.

The section on the thorax has been both rearranged and expanded. New pictures effectively aid the dissecting processes. Of greatest value is the authors' conciseness and the resulting lucidity.

FRENCH'S INDEX OF DIFFERENTIAL DIAGNOSIS. Edited by Arthur H. Douthwaite, M.D., F.R.C.P., Senior Physician, Guy's Hospital; Honorary Physician, All Saints' Hospital for Genito-urinary Diseases. Ed. 7. Cloth. Pp. 1046, with illustrations. Price $20.00. The Williams and Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1954.

Although Herbert French is now deceased, his successor, Arthur H. Douthwaite, has done a commendable job of adhering to French's original purpose—that of providing a practical guide in the applications of differential diagnosis to all the main signs and symptoms of disease.

The seventh edition of this remarkably thorough index has been simplified and abbreviated, but it retains all essential references. Overlapping and repetition have been avoided, obsolete material has been deleted, and much new material has been included, resulting in a more compact and useful work. It will be noticed that the title has been altered to conform to the actual contents.

The 731 illustrations, many of which are in color, provide excellent exemplification of the extensive diagnostic symptoms discussed. The difficult task of bringing this volume up to date has been most satisfactorily accomplished by Dr. Douthwaite and his contributors.

BAILEY'S TEXT-BOOK OF HISTOLOGY. Revised by Philip E. Smith, Ph.D., Sc.D., Professor Emeritus of Anatomy, College of Physicians and Surgeons, Columbia University, and Wilfred M. Copenhaver, Ph.D., Professor of Anatomy, College of Physicians and Surgeons, Columbia University. Ed. 13. Cloth. Pp. 775, with illustrations. Price $9.00. The Williams & Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2, 1953.

This thirteenth edition of a text written primarily for first year medical and dental students by its very nature excludes much material that would be included in a source book for teachers and research workers. The revisers, however, feel that structure is seen in the proper perspective only when correlated with function; hence, the physiologic significance of the structures is frequently discussed.

Pertinent results of recent research are included in the book. New, also, are six color plates and eighty-eight half-tone and line figures. Some sections have been entirely rewritten, and changes are to be found throughout. The end result is an excellent presentation of normal histology, a knowledge of which is so necessary to an understanding of altered structure.

CORRECTION

In the September JOURNAL, page 54, William C. Spence, Jr. was listed as the delegate from Virginia to the Annual Convention of the American Osteopathic Association. Felix D. Swope was the delegate for 1954. We regret the error.